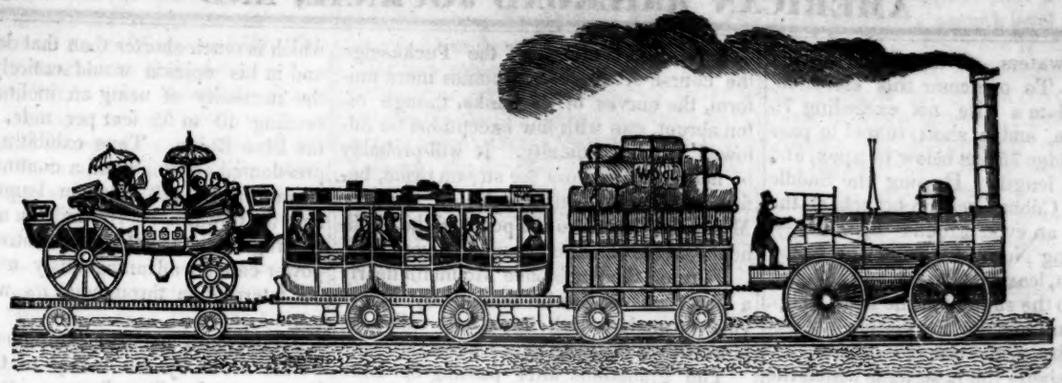

AMERICAN RAILROAD JOURNAL,
AND ADVOCATE OF INTERNAL IMPROVEMENTS.

PUBLISHED WEEKLY, AT NO. 132 NASSAU STREET, NEW-YORK, AT FIVE DOLLARS PER ANNUM, PAYABLE IN ADVANCE

D. K MINOR, and GEORGE C. SCHAEFFER, } EDITORS AND PROPRIETORS.] SATURDAY, AUGUST 6, 1836. [VOLUME V.—No. 31.

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AMERICAN RAILROAD JOURNAL.

NEW-YORK, AUGUST 6, 1836.

To Engineers.—We have once or twice spoken of the importance to Engineers of giving early and specific orders for Instruments. The demand is so great that very few can be had for months after the orders are given.

We desire now to say to those who wish to order Instruments through us, that they will save time in all case by giving specific directions what they wish us to *order* for them—as every thing must be ordered and take its turn—and the order will be given in their name, and information given as to the time when the order will be completed.

Utica and Schenectady Railroad.—This road was open to the public on the 1st instant, having been completed in less than two years.

On Tuesday the 2nd, in the two morning trips, over 500 persons passed over this road, this being the first day on which fare was taken.

The road promises great facility to travellers, and as great profit to the stockholders.

We were present at the celebration, and shall give particulars in our next.

Geological Survey.—The Governor of the State has completed the arrangement of the detail of this survey, and most of the nominations have been made. We look forward to the results of this movement of our State with intense interest.

From the Savannah Georgian.

KNOXVILLE CONVENTION.

A.

Report of J. Edgar Thompson, Engineer, as to the practicability of running a railroad through the Rabun Gap, and also by Mr. McNair's, in Murray county or Walker.

Knoxville, July 5th, 1836.

To William Dearing, Esq.
President of the Geo. R. R. & B. Co.:—

Sir:—In pursuance of a resolution of the stockholders of the Georgia railroad and Banking company, I have the honor to communicate to you the result of my examinations of the country between Athens, Georgia, and Knoxville, Tennessee, made to ascertain the practicability of constructing the proposed railroad from Charleston to Cincinnati and Louisville through Georgia.

The limited period consumed in these examinations will prevent me from making at this time, more than a general statement of the facts developed in the course of the reconnoisance. These, however, are sufficient to enable me to state with perfect certainty, that *no stationary engine* will be required on the whole route from Augusta to Knoxville; and a rise at two points only extending 40 feet per mile. In this opinion I am fully sustained by Col. Brisbane, an Engineer of South Carolina, who accompanied me in my examinations from Athens to the summit of the Blue Ridge.

Commencing at Athens (a distance by railroad 248 miles from Charleston,) we ascend the left bank of the Oconee river, to Big Sandy creek, thence we pursue the Western slope of the latter stream, gradually rising to the summit of the Ridge, separating it from the Oconee, continuing on this Ridge a short distance we have the waters of the Savannah river on the right, and at the Poplar Spring, 37 miles from Athens, those of the Chattahoochie flowing into the Gulf of Mexico on the left. This Ridge is here denominated the Chattahoochie Ridge; along its summit we continue 15 miles, and thence descend a small stream called Camp Creek, three miles to Hazel Creek, thence up the Hazel one mile, and following a small branch, cross the Ridge parting it from the Looquer river, and fall into the valley of the latter, on or near the mouth of Deep Creek. From Athens to the Poplar Spring, the ground is unusually favorable for the construction of a railroad, and will not require, at any point, an inclination of more than 30 feet per mile between the Poplar Spring and the Looquer, the ground is uneven, rendering necessary, unless a heavy expense should be incurred in the graduations, inclinations of from 50 to 60 feet per mile; the curvature, however will be easy.

Entering the valley of Looquer, a tributary of the Chattahoochie, we ascend along its margin by an easy and uniform inclination not exceeding 20 feet per mile, without encountering any material difficulty, until we reach Hamilton's Mill, where the river becomes and continues very sinuous for a distance of three miles—in this space the stream must be crossed at several points, and deep excavations made through some of the spurs of the hill projecting into the valley. Passing these the river banks, though still circuitous, are favorable to Raper's Creek. Thence we ascend Raper to its source encountering little obstruction, except at its passage through the Oaky Mountain, when it falls perpendicularly 15 feet, at which point some expensive work will be required. Leaving Raper we cross the Ridge parting it from Talalah, and descend a small stream to the right bank of the latter; up this, we ascend one mile, and cross the river just below the entrance of Wild Cat Creek; upon this portion of the line no gradation will be required exceeding 40 feet per mile. After crossing the Talalah, we follow Simpson Creek between 5 and 6 miles, then a small branch one mile—at the head of which we pass the Saddle, a low depression between the Grassy Mountain and the Blue Ridge, di-

viding the waters of the Talalah and the Stecoa. To overcome this elevation, we contemplate a rise not exceeding 70 feet per mile, and a short tunnel to pass under the Ridge 75 feet below its apex, and 800 yards in length. Passing the Saddle we descend Cobbs Creek, a branch of the Stecoa, over an even ground 3½ miles,—thence turning North, we enter the valley of the Stecoa, leaving Clayton on the right, and ascend to the summit of the Blue Ridge at the Rabun Gap, our inclination not exceeding 30 feet to the mile.

To comprehend the ease with which the ascent to the Blue Ridge is effected at this point it is only necessary to recur to the circumstance that that portion of Georgia lying at the foot of the Blue Ridge, (which here forms the backbone of the U. States) is on elevated table land. This feature of the country will be manifest to any one who will inspect the maps of Georgia and observe the singular direction of the Chattahoocie river. Its course, it will be perceived, runs parallel with the Ridge, from which issues the watters of nearly all the rivers which rise in the State and fall into the Atlantic—the elevation of its* bed being scarcely less than their source. The Talalah river at that point we cross it, flows through this table land—descending rapidly to its verge where it is precipitated by a succession of rapids and perpendicular falls in the space of two miles, a heighth of 800 to 1000 feet, and thence flows with a rapid current to meet the Chataga a distance of five or six miles.

At this intersection it is understood that Capt. Bache made the descent from the Blue Ridge at the Rabun Gap, to be between 15 or 1600 feet; consequently the Talalah, at the point we cross it, cannot be more than three or four hundred feet below the Gap.

It is also believed, that after a more careful examination of this country shall have been made that other approaches to the Gap may be found which will afford even greater facilities to ascend it than the route we have pointed out.

The Rabun Gap is the head of a wide and fertile valley expanding as we descend the little Tennessee (which here takes its rise) to a width of two miles passing the N. Carolina line, it gradually contracts until the mountains that close in upon the river, some 7 or 8 miles below the town of Franklin, and 27 from the Ridge, thence 8 miles the narrow flats on the margin of the stream, afford space for the easy construction of the road. The descent from the Gap will average from 10 14 feet per mile.

The line will occasionally cross the river to straighten its course, the river being here narrow, this will not be expensive.

The river now becomes more rapid and very circuitous, which character it retains to the mouth of the Tuckaseige a distance of 15 miles. Upon this portion of the route, much expensive work will be required. The river must be crossed frequently and through some of the parts of the mountain, short tunnels will be necessary.

* Chattahoochie.

Passing the mouth of the Tuckaseige the course of the river becomes more uniform, the curves of its banks, though often abrupt, can with few exceptions be followed without difficulty. It will probably be necessary to cross the stream twice, before we have entirely passed Smokey Mountain, thence to the point of the Chillhonee Mountain, the ground is favorable.

Turning the Chillhonee Mountain nearly a direct course can be obtained by Maryville through a rich limestone valley to Knoxville a distance of 27 miles.

The gradations after passing the Blue Ridge will not exceed at any point 35 feet per mile.

ESTIMATE.

Of the cost of forming the road bed for a single track railroad over the route examined.

For a double track it will be a safe calculation to add two thirds of the amount estimated for a single road.

From Athens to the Poplar Springs, 37 miles	$182,000
From Poplar Springs to the Talalah, 45 miles	392,000
From Talalah to the Blue Ridge, 14 miles	164,000
From the Blue Ridge to Whitakers, 35 miles	168,000
From Whitakers to the Tuckasiege 15 miles	244,000
From Tuckaseige to Chillhonee Mountain 38 miles	304,000
From Chillhonee Mountain to the Holetoo at Knoxville, 27 miles	202,000
211 miles	$1,656,000
Add 12 per cent for contingencies and superintendance,	198,000
Total,	$1,854,000

From the above estimate it appears that the length of the road from Athens to Knoxville is 211 miles, and that the average cost of graduating the road bed will be $8,786 73 per mile, the bridges to be built with stone piers and wooden superstructure; this estimate is considered as amply sufficient to complete the road in a permanent manner.

To the above amount if we add $5,200 per mile for a single track of superstructure laid complete, we have the aggregate cost of the whole road two millions nine hundred and fifty one thousand two hundred dollars.

The valley of the Little Tennessee unquestionably presents the most direct, and least expensive channel, through which a railroad from Charleston to Cincinnati can be made.

In addition to this important advantage, which it possesses over all other routes, it is not to be forgotten that the line passing through Georgia will be uninterrupted by stationary engine power.

At one point only it is necessary on the line examined, to use an assistant engine, and I am informed by Col. Brisbane, that since we parted he examined another route which is much shorter than that described; and in his opinion would entirely obviate the necessity of using an inclination exceeding 40 to 55 feet per mile, to reach the Blue Ridge. Thus exhibiting the unprcedented spectacle of a continuous line of railroad of 323 miles in length traversing for upwards of 100 miles a mountainous region on which locommotive engine power can be advantageously used, without interruption throughout its whole extent.

Having now concluded my observations on the route by the valley of the Little Tennessee, I will call your attention to another line which has been suggested passing through a fertile region of country entirely around the Blue Ridge. This route would have been examined had my time permitted, the information desired, however, is partly supplied by the reports of Col. Long on the Mississippi and Atlantic railroad, and Mr. Nichols on the Coosa river, now before me.

From an examination of these reports I should consider the route, entirely practicable. Mr. Nichols states the important fact that the ridge separating the waters of the Tennessee and Coosa is only 131 feet above the head of boat navigation on the waters of Hiwassee.

The route leaving Athens would cross the West prong of the Oconee, and thence follow the ridge, separating it from the Apalachee to the Chattahoochee, thence crossing this river it would pass through counties Forsyth, Cherokee, Cass, and Murray, to the State line near McNairs thence, there is a beautiful limestone valley to Knoxville, passing Calhoun, Athens, (Tenn.) Madison and Maryville.

The length of the road in this direction would be about 250 miles.

The most important advantages which this line of improvement presents, is the facility with which a connection may be formed with the Tennessee river at or below Dallas. This river is navigable for eight months in the year for steamboats drawing three and an half feet water up to Knoxville, and for flat bottom boats drawing two feet at all seasons.

Also the favorable direction which it offers to form a continuous line of railroad communication between North Alabama on the one hand and Nashville, West-Tennessee on the other.

Respectfully submitted,

J. EDGAR THOMPSON.
Civil Engineer.

B.

Details of a Route for a Railroad, submitted to the Georgia Delegation by General Newnan.

It is believed that the best route for a Railroad from the Ohio river to the Southern Atlantic coast, would be to pass through the State of Kentucky, so as to strike the Cumberland Mountain at the Elk Fork at Wheeler's Gap, about fifty miles to the North of Blair's Ferry on the Tennessee near the mouth of Holston, and 30 miles below Knoxville.

From Blair's Ferry, the road would pass

40 miles through the level, fertile and beautiful valleys of Sweet Water and Dry Valley, to Calhoun on the Hiwassee.

At this point, a route should diverge to the right through a very level valley in Georgia and Alabama, for a distance of 200 miles, to Wetumpkee, a few miles above the junction of the Coosa and Talapoosa rivers, to which point it is believed steamboats arrive at all seasons of the year.

From the Hiwassee, the Georgia road should pass up the Chetatee valley, down the Red Hill valley near the Big Spring, and then down the Connesauga, and cross the Ostenola to Newtown, a distance of 50 miles.

From Newtown the road should run on, and pass the Etowa at some point between Sally Hughes and Brewster's ferry, and strike the Chatahoochee at some point in the vicinity of Shallow Ford, a distance of 70 miles—crossing the Chatahoochee, the road, it is presumed, would branch out in a direction to Macon, Athens and West Point, or Columbus.

The Alabama route would pass through the centre, and richest part of the State, and through a cotton region of 400 miles in extent. The Georgia reute would pass through cotton regions of 800 miles in extent. We have every reason to believe that it is impossible for Kentucky, Tennessee, Ohio and Indiana to find better markets for their produce, or safer or cheaper channels by which to receive their supplies. Nashville might be connected with this route, by a lateral Railroad to the mouth of Holston, 170 miles, or at Chatadga in Walker county, by crossing the Tennessee at Ross' ferry. This would give to the West four markets instead of one. From the direction of these routes, the country through which they pass, and from surrounding circumstances, the warmest expectations may be formed, that from their completion, the most vigorous and munificent Legislation would accrue on the part of Georgia and Alabama. These condensed views, it is presumed, will be sufficient for the occasion, though the subject is fraught with a great many other important considerations in relation to one moral, social, commercial and political condition, and will readily present themselves to all intelligent inquiring minds.

C.

Route of Road suggested by Jacob M. Scudder.

The undersigned would respectfully suggest to the Georgia Delegation the following as the shortest and most practicable route for the connection of the proposed railroad with Georgia. He has been politely furnished by the Hiwassee Railroad Co. with the description of the route from Knoxville to the Valley near McNair's, at which place it will connect with the route into Georgia, as follows:

From Knoxville to Blair's ferry on Tennessee river, 30 miles—from Blair's ferry to Philadelphia, 5 miles—from Philadelphia to Athens, 20 miles—from Athens to Armstrong's ferry on the Hiwassee river, 15 miles—from Armstrong's ferry to McNair's, 22 milles.

By this route from Knoxville to McNair's, you pursue the grassey valley to Campbell's station, thence to Blair's ferry, or near there; thence up the Sweet Water Valley to the dividing ground between the waters of the Sweet water creek and Mouse creek; thence down the Mouse creek valley till you come within 5 miles of Athens; thence through a level gap in the ridge of Estenala valley; thence down said valley to about 2 miles below Athens; thence through a gap of the ridge to Chestua valley; thence down the valley to near Armstrong's ferry; thence up the valley of South Chestua to the dividing ground between South Chestua and Connesauga river, and thence down a valley to near McNair's where it crosses into Georgia.—From McNair's on the Connesauga river to Spring Place in Murray, Georgia, 16 miles, entirely through a valley north west of the mountains; thence to Coosawatee river at an Indian town of that name, 14 miles, and in the same valley, which will bring the road to the verge of the mountains and opposite to where the Talking Rock creek enters into the Coosawattee river. Talking Rock creek rises 16 miles from this point and runs in a north westwardly direction, and parallel with the Federal road to the point above stated; and to avoid what are known as the Coosawattee mountains, the road will pass up the said Talking Rock creek, the first 4 miles being perfectly level; the next 6 miles have not been so strictly examined, but I cannot believe but that in so short a distance a road can be easily made, as there are no material falls on the creek, and the road will pass on its margin. The next 6 miles will pass in the valley of the creek, and without a rise perceptible to the eye. The next three and a half miles is a gradual ascent, and agreeable to the means I had to judge. rises only 75 or 80 feet in that distance, and at the end of which we reach the summit of a long, beautiful and very level ridge, dividing the waters of Shary's Mountain and Long Swamp Creeks, for the distance vf 21 miles—and terminates at Heightown or Etowah river, near the junction of Long Swamp Creek and said river. From this point on the Etowa, routes may be selected in any direction, as the mountains and spurs of the mountains, have been entirely passed. But to proceed with this route, it would be best, but not absolutely necessary, to pass up the Etowah, as it bears in the proper direction—four miles thence to the Chattahoochie river, at or near Gothard's Ford, about two miles above Winn's Ferry. This is about twenty miles, and passes over a smooth and even country.

It will be borne in mind that this report is not predicated on mathematical calculation, but the line was viewed by the eye expressly for the railroad route.

To continue the route to Athens, Georgia, after crossing the Chattahoochie river, pass along a level ridge around one of the prongs of the Oconee river, and intersect he Federal road at Rile's, a distance of eight miles—thence or near the Federal road, which is a smooth level ridge or high ground, not crossing the smallest stream a distance of fifteen miles—thence crossing one prong of the Oconee river, a continued level of high ground eighteen miles to Athens. Respectfully submitted,

(Signed) Jacob M. Scudder.

Knoxville Convention.—The following gentlemen from Georgia attended the Convention:

A. S. Clayton,—Athens,
Will. Dearing "
Wm. M. Morton, "
James M. Wayne,—Savannah,
S. B. Parkman, "
M. H. McAllister, "
Jos. W. Jackson, "
J. R. Matthews,—Habersham co.
Turner H. Trippe, "
S. A. Wales, "
Rich'd W. Habersham, "
George D. Phillips, "
Thos. G. Janes,—Greene co.
J. Edgar Thompson,—Augusta,
Wm. W. Holt, "
Charles J. Jenkins, "
Robert Campbell, "
A. Cunningham, "
T. G. Casey, "
John M. Rose,—Dahlonega.
H. B. Shaw, "
A. B. Holt, "
Charles Evans,—Clarke co.
Ew'd Paine, "
M. J. Walker,—Rabun co.
H. T. Mosely, "
J. H. Sloan, "
E. Coffee, "
J. V. Harris,—Elbert co.
Thos. J. Heard, "
Beverly Allen, "
Joseph Rucker, "
A. Hammond, "
Simeon Oliver, "
William White, "
Jacob M. Scudder,—Forsyth co.
W. B. Harban,—Lumpkin co.
W. H. Gathright, "
Jas. Edmondson,—Murray co.
L. R. McCamy, "
James Donahoo, "
J. B. Morton, "
Josiah H. Gill, of Hall co.
Rich'd Winer, "
C. W. Parks, "
John M. Raiford,—Ruckersville.
Joel E. Mercer,—Talliaferro co.
James R. Butts,—Macon.
Washington Poe, "
M. H. Chappell, "
Steward Floyd,—Morgan co.
William Johnson, "
Joseph W. Walton, "
H. Hemphill, "
R. H. L. Buchanan,—New Echota.

It will be seen from the following account from the Boston Gazette and Centinel, that the great Eastern Railroad has actually been commenced, and under auspecies that leave no doubt as to its comp etion. This has been a favorite project with our eastern friends, and one that cannot fail to have an important bearing upon

their interests,—especially upon those of East-Boston.—*Courier & Enquirer.*

The detroit Journal of June 20th says:—"*What would be the disposition of the people of Green Bay, in reference to forming a part of the State of Michigan?*—Their business—the sources of their prosperity, lie this way. Their commerce must pass through the strait of Detroit. They will have little commercial connection with the western part of Wisconsin. The Mississippi is the natural channel for the trade of that region. It will be a trip of but a few hours from Green Bay to the mouth of Grand River. When the Grand and Sagana rivers are joined by a Steamboat channel of fifty miles, the trip from Green Bay to Detroit will be made in 48 hours, more or less. From the head of Green Bay to the rapids of Grand River, will be only about 24 hours running. A Railroad car will run from Grand River rapids to Detroit in eight hours.

By cutting a ship canal of a few miles from the head of Green Bay to Lake Michigan, the voyage from thence to the mouth of Grand river will be reduced to about 10 hours."

CHAMPLAIN AND ST. LAWRENCE RAILROAD.

The public opening of this important route took place on Thursday last, under circumstances of peculiar interest, and to the general satisfaction of a numerous and respectable company, who had been invited to partake of the hospitality and good cheer of the Stockholders of the Company.—Among the guests, who assembled on board the *Princess Victoria*, at about 10½, were the Earl of GOSFORD, Sir CHARLES GREY, Sir GEORGE and Lady GIPPS, Mr. ELLIOT, Secretary of the Commissioners, several of the Members of the Legislative Council and House of Assembly, and of the mercantile body and garrison, and many respectable strangers, to the number of about three hundred. The fine band of 32d Regiment enlivened the company with their superior excellence in the performance of many admired overtures. The trip to LAPRAIRIE was performed in about fifty minutes. The subsequent journey to ST. JOHN'S is thus faithfully described by the *Courier* of this morning.

"After landing at the railroad wharf, which runs out into the river a considerable way, the company proceeded to the cars which were in waiting at the termination of the railway to convey them to St. John's. Before starting the locomotive engine made two short trial trips with its tender, and as the accident which occurred lately to it had not been thoroughly repaired, it was deemed advisable to attach to it only two of the passenger cars, all of which are very comfortably fitted up and elegantly painted outside; while the other cars with the rest of the company, were drawn each by two horses. The locomotive with its complement soon shot far ahead of the other cars, which passed along the road, just as fast as the nags, which were none of the fleetest, could drag them. The motion was easy, and elicited from many, comparisons far from favorable to the usual comforts of travelling by the stage road. In less than two hours from starting, all the company had arrived at St. John's in good time, and in excellent mood for the collation in the railway station house, which was pleasantly cool, and decorated with green branches. The repast, with its accompaniments of sparkling champaigne and madeira, was not more enjoyed, than it was universally admitted to be in itself, suitable and excellent.

After partaking of the bounty of the stockholders and the good catering of SWORDS, with the judicious assistance of DAVID LUCK, that attendant on all joyous occasions, the company were requested by the Hon. PETER M'GILL, the Chairman of the Association, to lose no time in drinking the few toasts he had that day to propose. The first was "the King" and the Hon. Chairman took the opportunity of mentioning all the circumstances connected with the commencement and termination of the route, the advantages it would confer on the Province, and the spirit of enterprize it was destined to create for similar works, of which this railroad would be the happy forerunner. All the honors were paid to the health.

The second toast he gave, was "The President of the United States," as the official representative of a people with whom we were now connected in a happy, and he hoped lasting peace; whose support had been most extensively given to the completion of the present work, and with whom, through its operations, they were to be brought into still greater and closer bonds of union. After the cheers had subsided, TIMOTHY FOLLETT, Esq. of this city, returned thanks in a very neat and appropriate address, for the honor conferred upon his country and fellow-citizens, and strongly urged upon all present to be influenced by the same enterprise and energy which characterised the AMERICAN people, and which would result in the same prosperity.

The third toast was "the Earl of Gosford and the Ladies and Gentlemen who had honored the company with their presence." His Excellency returned thanks, in a speech delivered with firmness, and marked with much neatness. His Lordship alluded in strong terms to the great resources of this country, if properly developed—urged upon all a spirit of unanimity and concord, which he would do his best ultimately to obtain, and after remarking the glorious termination of a work which united the *St. Lawrence* and the *Richelieu* within so small a distance, proposed the health of the Directors of the Company.

The Chairman proposed the health of WILLIAM D. LINDSAY, Esq., the active Commissioner under whose direction the work had so steadily advanced.

Mr. LINSDAY, in replying, asked for leave to introduce here the ceremony of presenting to Mr. CASEY, the Engineer, a gold medal, which had been subscribed for by the overseers along the work. Mr. M'MAHON, on behalf of his brother overseers, addressed Mr. CASEY in terms of eulogium, for his gentlemanly conduct towards them; Mr. M'MAHON's remarks which were somewhat extended, delivered with ease and fluency, and indicative of much sound sense and judgment, were repeatedly and deservedly cheered. Mr. CASEY, in accepting of this token of gratitude from those who had been under his superintendance, spoke a few words in reply, expressive of his satisfaction at the steady and active conduct of all connected with the work.

The Earl of GOSFORD now claimed a toast for Mr. CASEY, whose abilities had been extolled by his employers, and whose conduct had been approved of by those under his control. His Lordship also complimented Mr. M'MAHON upon his speech, and eulogised the general conduct of the laborers connected with the railroad.

It being time now to depart, the company proceeded to the cars, extremely well pleased with the entertainmen they had received. The return to MONTREAL we shall give in the words of the *Courier*:—

The locomtive in returning took four cars with it, and the other twelve were dragged back, as before, to Laprairie by horses. There would have been almost a surfeit of enjoyment, had nothing occurred to break in upon the pleasures of the day. It was pretty far advanced in the afternoon before the company got re-embarked on board the *Princess Victoria* for Montreal, and it unfortunately happened that, in consequence of a strong easterly wind, and the depth of the boat in the water, she grounded on leaving the wharf. When at length she was got clear and had proceeded a little way on her voyage, she was again detained by being compelled to lie-to, till a man who had fallen overboard was picked up. By this time it was so dark that it was considered dangerous to pass the rapids, and she returned to Laprairie. Upon landing, there was an immediate scramble among the passengers for beds, of which few, in proportion to the demand, were to be found. To diminish the *disagremens* of this mishap, and to extract even amusement from the misfortunes of so pleasant a day, a dance was got up at the Laprairie Hotel, which was continued to a late hour. Those who were unable to procure beds that could be slept in, had a fund of amusement for the rest of the night, in recounting to each other their adventures in search of such luxuries. About six o'clock yesterday morning, the *Princess Victoria* landed her valuable cargo in perfect safety, with every cause to make them have agreeable recollections of the opening of the Champlain and St. Lawrence Railroad.

The return trip of the locomotive on Thursday was completed in fifty-nine minutes, but yesterday, we learn, that, with four passenger and two loaded freight cars, it effected the journey in forty-five minutes and returned in thirty, over a road of four, teen and a half miles in length. A few repairs have to be made to the engine, and her regular trips commence on Monday next, on the return of the *Princess Victoria* from Quebec, for which she proceeded yesterday at ten. In noticing this fine boat, i may be mentioned that she was met by the *Eagle* near LANORAYE, six miles on this side of SOREL, and would be able to effect the forty-five miles in three hours, making on an average twelve hours for the whole route to QUEBEC.

REPORT.

TO THE GOVERNOR AND COUNCIL OF MARYLAND, AS TO THE ROUTE OF THE MARYLAND CANAL.

Annapolis, July 26th, 1836.

The undersigned have been appointed to ascertain "whether and at what expense with due supply of water a Canal be practicable from the Cheasapeake and Ohio Canal to Baltimore, by the valley of the Monocacy and Patapsco, or by a route diverging from the said Chesapeake and Ohio Canal, from the mouth of Seneca, exclusively within the limits of this State;" have the honor to report that under their direction two parties of Engineers have been engaged during much of the present

month making such surveys as might serve to form a correct opinion upon the questions submitted to them for investigation.

The attention of the undersigned was first directed to the supply of water for the summit level on "Parr Spring Ridge;" and a personal examination have satisfied them that the natural flow of the streams which have their rise in the Ridge, was entirely inadequate to the wants of a canal of even the minimum dimensions prescribed for the cross-cut canal, and that therefore it would be neceseary to collect into reservoirs the surplus waters of the winter and of the wet season, in order to meet the deficiencies of the summer and dry season.

To ascertain whether in this way by reservoirs "*a due supply of water*," for a summit could be had, we directed lines of level and of survey to be traced out, embracing all the areas of country which drain from a level higher than, or may be made available to, the several summits respectively.

For the commencement of our operations we selected a route as favorable as any, if not the most favorable of all—the one connecting the head waters of the Linganore with those of the western branch of the Patapsco, with the lower summit proposed by Brigg's in 1823.

The extent of drainage into the lower summit of the Linganore route from actual survey, conducted as above, is less than a surface of 20 square miles—an extent of country barely more than one-third of what we need, even if it would treasure up all the water of the winter and of the wet season.

The result of this minute and accurate survey is so decisive that in addition to a personal and careful examination of the country that can be commanded by a summit at any other point along Parr Spring Ridge, (having reference to the field notes of Brigg's survey of 1823, which may be fully relied on so far as accuracy of levelling is concerned,) we feel called upon to express at once fully and decidely our opinions and acdordingly we do so—a "*due supply of water*" *cannot be had on any line of Canal crossing* "*Parr Spring Ridge.*"

This opinion is sustained in the strongest manner by the experience of the Union canal of Pennsylvania, on whose works it has been necessary to resort to artificial means to collect a sufficiency of water for the summit. A reference to the Union canal, is unhesitatingly made, inasmuch as the Engineer on the part of the State has lately visited that work with the view of obtaining such information as might have a bearing on the subject under discussion—and we report that calculations of the supply of water furnished by a given extent of country, wbich can be made available through the natural flow of streams and the aid of reservoirs based upon the experience of the Union canal, sustain fully and unquestionably the opinion we have already expressed of the utter insufficiency of water to feed a canal of the assumed dimensions and capacity of the Chesapeake and Ohio canal passing through Parr Spring Ridge, at any point within the limits of the State of Maryland.

Other routes than across the ridge may have been suggested for a cross-cut Canal, exclusively within the limits of Maryland.

It has been thought for instance that the waters of the Potomac might be brought down on a high level from the mouth of Monocacy, up the Seneca valley, thence nearly parallel to Parr's Ridge, along its south western base and around its termination at Vansville, by a route that would avoid a summit and admit a continuous descent to Baltimore. It has also been suggested in like manner to take the Potomac water from the Great Falls, from the Little Falls, or perhaps from some point higher up, and to pass along exclusively within the limits of Maryland, without a summit. All these plans we pronounce utterly impracticable, for we have proved them to be so by actual examination with the level.

A plan has been suggested for crossing Parr Spring Ridge, of which we have made no mention. It is to gather all the drainage of the Western side of the Ridge by running the canal up the Linganore, thence along the Ridge and to pass through it at Westminister. This and all similar plans are more impracticable (if possible) than the direct route through the Ridge.

Our examinations have brought us to the conclusion that the most Northern practicable route from the Chesapeake and Ohio canal to Baltimore; and in fact the most judicious line, for such an extension of the Canal, is on or near the location traced by Dr Howard, in 1827, through the District of Columbia,—and as far as we are enabled to form an opinion, the estimate of cost submitted by Dr. Howard, on his plan was substantially correct.

We have spoken of the "due supply of water." We will now show what we consider to be that supply. Its amoun depends on the leakage of the summit level and that portion dependent on it for its supply—on the leakage of the lock gates—on the length, breadth and lift of the locks, and to some extent on the trunk of the Canal, and lastly on the amount of tonnage which it is calculated to accommodate. In estimating the leakage of the Canal and lock gate, the minimum amount on a *well constructed* canal has been assumed or ascertained from actual observations on canals in our neighborhood.

As it regards the dimensions of the locks in *length and breadth*, and of the *depth* of the trunk of the Canal, the same dimensions have been taken as those adopted on the Chesapeake and Ohio canal, of which this should be considered as an extension. If otherwise—If the locks should be made *shorter* or *narrower*, or the trunk *shallower*, it would be as preposterous as to place an extension of a railroad with rails closer together or wider apart, so that the cars of the one could not pass on the other.

In regard to the *width* of the trunk and *lift* of the locks, the undersigned have considered themselves at liberty to vary from the similar dimension on the Chesapeake and Ohio Canal, when called to do so by a scarcity of water—to continue the comparison, it is like increasing the grades on a railroad by which the useful power of a horse, or of a locomotive engine, is diminished, or the capacity of the road lessened. In calculating the quantity of water required, the lift of the locks on those portions of the line dependant for their supply on the summit have been put at 4½ feet only.—The effect of this small lift may have as to loss of time in the tran it of trade, and also the effect of narrowing (as we are compelled to do) such parts of a canal as are deficient in water, come properly under the head of the capacity of such Canals, when compared with other Canals of larger expanse.

The probable amount of tonnage, or the number of locks full of water that will be taken daily from the submit is another very important element in estimating the requisite quantity of water.

Looking to the history of the inland navigation of the U. S.—To the Erie Canal with its 40 feet width and 4 feet depth, now in progress of enlargement to 70 feet width and 7 feet depth—originally with single locks, now in part with double locks, which will soon be the case along its whole line; considering that this enlargement has been called for by the public in less than 12 years after its completion; and when we look further at the great increase of the Western Trade, and its still greater anticipated advancement, we do not feel justified in [taking as] the basis of our calculations less than a double sett of locks in constant use.

With these elements of calculation, 3,800,000 cubic feet will be daily required for a due supply of water.

In reference to the extent of country which will furnish this quantity of water we have already stated that the entire drainage of all the surface which can be commanded on any one of the summits is insufficient, and now add that it will furnish but little more than *one third* of the water we deem necessary.

It may perhaps be said that in 1823 the Commissioners appointed by the executive of Maryland to survey the same ground pronounced on the practicability of the route of the Linganore across to the head waters of the Patapso, and that they speak with confidence of the supply of water. In answer to this we may reply that about the same time these surveys were made, the Union Canal was planned and commenced with reservoirs, then considered ample to supply the summit with water and to pass daily 100 boats. This canal has been finished and is now in use, with only 25 boats passing daily—with locks 75 feet long, 8½ feet width, and 4½ feet lift, their reservoirs for the three summer months furnish less than 1-10 of the water required. The greater part of the remaining 9-10 being forced up, with pumps, 96 feet into a feeder 3 miles long; a small portion acting as a regulator on the summit, is pumped up 32 feet. The undersigned believe that with scarcely an exception, in Great Britain, disappointment has followed where reservoirs

have been relieved on to collect and retain a sufficiency of water for active trade. We will add one other remark before dismissing this subject. It appears from an inspection of the Report of the U. S. Engineer, in 1826, on the the Chespeake and Ohio Canal, that more than five times the extent of country, and more than five times the quantity of water can be commanded on the summit of that Canal through the Alleghany Mountain than we collect on the summit through " Parr Spring Ridge."

Satisfied with the impracticability of the several routes *exclusively within the territorial limits of the State of Maryland*, submitted to our examinatian, from the entire insufficiency of water to feed the summit levels, we have not deemed it necessary to prepare detailed or even general estimates of their cost; but are satisfied that the entire cost of either of the proposed routes aforesaid, even if a sufficiency of water could be obtained, would not fall short of six millions of dollars, excluding the heavy damages to water rights and other property, inseparable from the construction of such a canal along the Valleys of the Monocacy and Patapso.

It is matter of regret to the undersigned that they have not been able to avail themselves of the experience and talents of Col. S. H. Long, the Engineer appointed by the City of Baltimore, whose occupations have detained him elsewhere.

They hope in a short time to submit the *details* of their field operations to be placed on record, to be referred to at any time hereafter, by those who may chose to examine minutely into the data on which their opinions are based.

GEO. W. HUGHES,
U. S. Civil Engineer,
on the part of the Maryland Canal Co.
CHARLES B. FISK,
Civil Engineer, on the part of the State.

From the Journal of the American Institute.

GENERAL TALLMADGE'S LETTERS.

The correspondence of General Tallmadge with the American Institute, continues to possess much interesting and useful matter. The letters from which we extract in our present number contain much valuable information on the culture of Silk, to which we beg to refer our country readers more particularly. His first letter is dated at Rome 3d, January last.

He says:—" I fear you may have misunderstood my last letter, and suppose I intended to speak of the particular Roman cement (so called) which is imported and used in our city. The Romans used two kinds of cement in making their walls; the one the common mortar, and the other the peculiar cement. The one is composed of fine materials, and used for the troughs of their aqueducts. An aqueduct near Tivoli, covered with stone, and laid and pointed with this cement, is now to be seen, after perhaps two thousand years, and is so firm that it will as soon break through the stone as the cement. I intended, however, to speak of the common mortar, used for brick or stone walls. Many of the monuments, as well as the piers and butments of bridges, were made with marble or cut stone as a casing, and the inside was filled up with fragments of stone, round paving stone or broken brick, filled in with common mortar, or, as I believe masons call it, grout. The casing, or cut stone, has, in most instances, by modern cupidity, been taken off; yet the inside remains standing, or, if fallen down, even yet continues unbroken, in large masses like rocks, and which now can only be broken with great labour. It is worthy of inquiry—how long the butment of a bridge, or any brick work, in our country, with the outsides or casing taken off, would stand exposed to weather and our climate? Do we not too often make such public works not only with insufficient mortar, but also often fill in their centres with common dirt and loose materials, fit only to receive moisture, so that the work soon falls down under the influence of our severe frosts?

This subject is worthy the consideration and correction of our legislature. Perhaps our corporation may more promptly give it their attention. The British parliament have set an example worthy of our imitation. They appoint a commission to investigate any subject of public interest, so that they can legislate more understandingly. The extension of our internal improvements, as well as other buildings, requires that they should be more permanently erected, and the end obtained by inquiry, or other means, will promote the interests of the state.

There is a growing attention on the Continent to the concerns of America, which have hitherto been unknown, or but little noticed. Many of the American newspapers are found on the Continent, and, although not always as discreet in their matter as might be desired, they often impart useful information, and are now much sought after here. The fame of our naval architecture, but more especially of our steamboats and railroads, has spread over Europe, and made our country more advantageously known, than all the other circumstances of our history. Our achievements in these points, and in domestic manufactures, are much spoken of, and furnish many inquiries, and tend greatly to throw light into Europe, and to liberalize its institutions. Steamboats are shortly to be put upon the Danube, and the other principal rivers of Europe, and public attention is universally turned to America, as greatly in advance on these important points.—Whatever has heretofore been the case, Americans are now as much respected and noticed here, as travellers from any other country—and our institutions are more inquired after. A file of the " New York American" is here, giving an account of the exhibition of the late fair of the American Institute, which has attracted considerable attention as an exhibition of the progress of mechanic arts. Although it is the prineiple of America to offer a full reciprocity in trade and manufactures, and only when this is refused to encourage her own by protecting duties, it is worthy of observation, that France and England are now furnishing a supply of books to prove the impolicy of this American protection, while the practical comment of this free trade learning is felt by travellers in crossing the boundaries of the governments and petty principalities, by repeated searches of their baggage, and the stoppage of articles of manufacture of other kingdoms, and which are in most cases totally prohibited. A bottle of Cologne, in a lady's trunk, is said recently to have incurred a fine of thirty dollars on crossing a dividing line; and all articles of jewelry, unless actually worn at the time, cannot pass with impunity from one Italian state to another; and above all, any Swiss or Italian manufacture of this kind must not enter France, the very source of free trade and anti-protection principles.

I have happened to see several of the *fairs* in England and on the Continent; they are different from ours, as intended not so much for exhibition of fabrics, as for actual sales of the articles by samples; their goods are exhibited in stores and booths, temporarily erected in the streets. It is essential that the predilection of foreign manufactures should be overcome in our country. From all the observation I have been enabled to make, I have confidence, that in most articles the manufactures of our city and country have arrived to such perfection, that they might now be exhibited, without fear of comparison, with like articles of foreign production.—Would it not be well, at some future fair of the Institute, to provide for an exhibition, in contrast of the foreign and domestic manufactures—and perhaps even to allow temporary booths, during the fair, to be erected for actual sales? This subject seems to be worthy of consideration. The people of Europe are divided into the governors and the governed, and the line of distinction is more strongly marked than you can well imagine; and it is almost incredible to notice, how little the arts and improvements of the present age have been applied, on the Continent, to the concerns and comforts of common life. The condition of society may be inferred from the fact, that there is scarcely a side-walk in the streets of any city on the Continent, saving perhaps some modern ones in a few places in Paris. It is said Russia has lately, and since the Emperor visited England, made side-walks in two streets of St. Petersburgh as an experiment. I have not seen one in any town on the Rhine or in Switzerland, or scarcely in Italy;—so little is the regard paid to the convenience of humble condition, while titled greatness can roll in carriages, protected by numerous attendants!—A like parallel could be shown in the absence of very many of the comforts of life so common to the American people. We have great cause to bless our happy lot, while we strive to select, from Europe, any benefits which may be transferred and added to our present stock. The charities of Europe, so much boasted of, are worthy of our study, and are generally more to be avoided than to be adopted. Those of the Continent are more in the nature of hospitals, than as almshouses for the poor. The anatomical museum of Edinburgh surpass-

es any that I have seen. The surgical preparations at Glasgow are excellent; but, as a whole, perhaps, London equals either, and certainly surpasses those on the Continent. Of Paris I do not speak, as I have not yet seen it. The medical preparations and the hospital at Rome, are very respectable. At Geneva great regard is had to the ventillation;—so too at Milan, which affords one of the best formed buildings I have seen, and where there is provision for twenty-five hundred beds, of which fourteen hundred were then occupied, in addition to out-buildings for contagious diseases. Florence has a respectable establishment with anatomical preparations in wax-work, more extensive than any I have seen, and with wonderful perfection. This is worthy of imitation. But at Florence is an institution, like to almost every other city on the Continent, and more extensive, for the reception of infants abandoned by, or without parents: windows are provided, by the doors, in which infants can be placed, and a bell rung, so that they may be received, and the person handing them in not be discovered. It is here against the policy to have any of the scrutinizing inquiry, so common in our country, after the parentage of infants, lest it might fix a stain upon monastic purity or titled excellence!—My friend, F. A. Tracy, visited this institution with me, and we were informed, by its principal officers, that they then had 7,000 infants under their care! And we saw so much as to credit the statement.—Begging, in Ireland, is almost universal: on the Continent it is a distinct profession, followed as a calling; and in many places it is greatly overdone, especially at Rome, and said to be worse at Naples. The result of my observations induces me to approve of the hospital charities —greatly to disapprove of those infant establishments, and very much to doubt the expcdiency of charities for the *healthy poor*. But, instead of leaving them to infest the streets, houses of correction should be provided, and as often as alms are asked, it ought to be followed by an inquiry, and the applicant either to receive care and ample provision for his wants, or be sent to a house of correction. London is now try ing this experiment in her principal streets, and has affixed notices requesting persons not to give alms. Observation upon the Italian cities will show the pernicious consequences of street begging. The *cold victual* beggars in our city are a fruitful nursery of vice, and will soon grow into an uncontrolled fraternity.

I had intended to have written more, but have not time. We start for Naples in the morning.

The next letter, in order, is dated Naples, January 26, 1836.

"The last mail brought us the public prints from Paris, announcing the melancholy fire at New-York, on the 16th of December. It has produced a gloom upon every American face here, and even awakens a correspondent feeling in other foreigners. I have full confidence, however, that the elastic power of our national character will soon rise above this calamity; 'though severe and extensive—it remains for us to profit by the misfortune.'

I have now been nearly a year in European cities, and have not witnessed, or heard of, a *single fire!* The American Consul, here, informed me yesterday, he had not seen a fire in Naples in eight years!—The walls of the first and second stories of the houses are thicker than ours; and in this we should improve in our city. The stairs are uniformly of stone, and the roofs of tile, and, most generally, the window frames are of stone. The result is, the materials being less combustible, there are fewer fires and less destruction. The *tiles*, at Rome, are *flat*, with an edge raised on each side, nearly half an inch, and narrowed down, so as to lay into each other like shingles.—They are about twenty inches wide, and thirty long: a small rafter, under each edge or course, is laid in mortar; then a semicircular pipe, laid in mortar, over the double edge or course. It is an excellent roof, and much better than any *tiled* roof I have ever seen with us. The same formed titles are uow found in excavating Pompeii, with the addition, oftentimes, of a moulding or cornice for the eaves of the house. Since the improvements in making our brick, with anthracite coal, such large tiles might well be made for roofs: but, if tin, or zinc, is preferred, I do wish *cast iron rafters* could be used in all and either case. It would not increase the expense, but would add to the safety. and lessen insurance. If cast, one side flat and with an upright centre, it would make them light, and yet of sufficient strength, and afford a groove for the tiles to rest on; the double courses, thus, to be covered by the half pipe; and when pointed inside would be tight, not only as against water, but also wind or snow. The same rafters, with sides reversed, would suit a tin or zinc roof. I have before explained to you, I believe, from Dublin, the importance of cast iron for frames and rafters. The floors, in Italy, are uniformly of tile or stone; if we, however, continue wooden floors, we shall yet have accomplished much in adopting iron rafters, and thus reject every thing combustible in our roofs. By making stone stairs, and stone or iron window frames, much of the combustible materials now in use with us will be rejected, insurance become less, and fires more easily controlled. It was an ordinance of ancient Rome, that the *basement*, and *first* and *second* floors of houses, should be without wood, and with arches; and it is these arches which now support the ruins.

The climate here is delightful—like our best October. There is little, however, for inquiry, as to improvements useful for our country. The government, or the people, would not suit us, and we perhaps would as little suit them. You can have no idea of the wretched condition of the population, and the state of general intelligence in this city. That class of active, elastic, and intelligent people which occupies our streets, is unknown here. No mind, no information, no inquires or interchange, mark this people; servile grovelling for a miserable subsitence only is aspired after!"

His next letter is dated at Naples, 5th March, 1836.

"Since I arrived in this land of fame and fable, I have not been unmindful of the culture of silk, so justly a subject of great and growing interest to our country. I have visited several manufactories of silk. It is not the season for seeing the silk worm, but most of its progress in other respects I have been able to see. I have made many inquiries in hopes of obtaining useful information. Finizio is an extensive manufacturer of sewing silk; he makes about 3000 lbs. a week, which is most sent to the New-York market. He is an intelligent man, and I found him willing to answer my inquiries; as also were several other establishments, and which mostly confirmed his statement. The sewing silks of Naples are mostly made from the silk grown in *Calabria*, where the worm is fed principally upon the *black* mulberry, and which makes the strongest and best for sewing silk. Finizio stated that the worm fed on the black mulberry made the strongest thread; *that* on the *white* mulberry, finer and better for fabrics; *that* on the Chinese mulberry still finer and more delicate.—When asked if the cocoon from the Chinese mulberry required more skilful and delicate work to wind and work it, he said it did, and immediately produced two skeins, one of which he said was from the black mulberry, (from a bush, perhaps, eight or ten feet in circumference,) the other from a bush about four feet. The lesser bush, he said, was less liable to break the thread in winding from the cocoon, and was used in finer silks for fabrics The black mulberry produced a stronger thread, and would bear the larger reel, and was principally used in that business. The silk here is mostly made in the country by families in detail, and much of it reeled there, and in this condition it is brought to market.—For sewing silk it is doubled as often as required, and twisted as much. This process is wholly in a *dark room*. The silk is worked wet, and for this purpose, to preserve a uniformity, the atmosphere is kept damp, the daylight excluded, and the work carried on with small hand lamps. The machine wss turned by men harnessed like mules. I have since been out about twenty miles to the silk factory of the king, which is worked by water power, and by which the cocoons are also reeled. I stated to Finizio, as well as at the king's factory, that the Italian sewing silk was sold in the American markets by its weight, while the American sewing silk was sold by the skein; and that one pound of the Italian would have perhaps two hundred and fifty skeins, while one of the American silk would have about three hundred and fifty skeins. The cause of this difference of weight, or why the American sewing silk has a tendency to curl or knot, they could not explain without a sample, but said the weight of sewing silk could be diminished or very considerably augmented in the *dyeing*, and that good dyeing required the silk to be well *boiled* in *soap*, after which it was put into an acid, and was there prepared for the process of the dye, according to the color, as desired. The gloss, or dressing, seems to be produced by beating and twisting on a post, which, with the manual labor put upon its finish, it is supposed prevents its tendency to knot.

I asked if the color of the cocoon, yellow or white, gave any difference of value, or indicated a sickly worm, and the answer was that the color was casual, and the value the same; that a selection of white or yellow cocoons from which to get eggs would probably produce a like color; and Mr. Finizio said he had some customers who had so selected and brought him *cocoons* entirely *white;* and that for white ribbons or fabrics, they commanded a greater price of from three to five per cent., though otherwise of equal value.

I have made many other inquiries and observations on this subject, but which in the limits of a letter cannot be detailed. The eggs are here in market during most of the year, and by being kept in a *grotto*, or cold

damp place, the worm can be produced as required. The sirocco, or hot south wind, is here the greatest enemy of the silk worm, and sometimes suddenly destroys so many of the worms as to require the reproduction of another class, from eggs in reserve.—They should be sheltered from this wind, and ventilation should be given them from above or by back windows. I think we have sometimes a like south, or south-west wind, which should be guarded against, and which our gardeners call a *red wind*, from a rust produced by it on peach, and apricot trees, which curls up and burns the young leaves, and often kills the trees, and is said to affect the mulberry trees in like manner.

The black mulberry tree is a native of our country, and is common in Dutchess county, especially in Fishkill. It is, on my farm, a common tree. It is as valuable for posts and timber as red cedar. If the suggestions of Mr. Finizio, and others, as to the black mulberry, are correct, as being better for *sewing silk* and more easily reeled, is not the matter worthy of attention? and especially in the first effort, and until skill and experience is obtained? The *black* mulberry can be immediately used, while a few years will be required to rear the Chinese, and obtain the silk for its more delicate work. My most excellent and lamented wife, in the few last years of her declining health, occupied her active mind in some experiments with the silk worm. She placed some of the eggs in the fall of the year, and left them, during the severe cold of the winter, in an upper chamber; and others she placed in a family room not affected by the frosts; in the spring season they produced the silk worm equally well; she put some eggs in the *ice house*, not on the *ice*, but on the *straw*, and in its atmosphere; and some time, I think, in July, they were brought out, and produced their worms in good condition. She fed one hundred worms on the black mulberry, one hundred on the white, one hundred on the Chinese, and one hundred on the black in their early stages, and, in the last stage, before making their cocoons, upon the Chinese;—all succeeded well. Those fed on the black, seemed to produce the strongest thread and most easily wound; the white the next, with but little difference: those fed wholly on the Chinese no ways different from those fed in the last stage, but greater difficulty to wind the Chinese than either those of the black or white. She had the publications made in our state, as well as those by order of congress on the culture of silk, as her instructions. The impulse of her mind was to assist in procuring a profitable family employment for children, for females and infirm persons; without which she considered that the noble system of our Sunday free schools and charitable institutions, was not carried to the full extent of their benevolence. The hope of this consummation affords a cheering prospect. A wide field is presented, in which the philanthropist, the moralist, and the political economist may jointly labor, and, in their efforts, greatly promote the public good. Whoever has seen the condition of the common people of Europe, and especially the idle beggars of Ireland and of Italy will appreciate the indispensable necessity of attention to this growing evil with us. It is a maxim of political economy that "demand begets supply," and experience has shown that every charity is over crowded. The towns of England are holding meetings, and resolving not to contribute to street beggary, but to give tickets on certain officers, who are to examine and afford ample relief to the afflicted, and send others to the houses of correction and confinement. The culture of silk will afford an additional and valuable employment, and should be connected with our charities; and employment of some kind should be provided in the houses of correction, which will be the most effectual charity.

But even as a new staple for the country, and a new article of production in common families, the culture of silk will be an invaluable acquisition. I have made every observation in my power, and I am fully convinced that the culture of silk will be found suitable to our climate, and well adapted to our country and people. Calabria, though south of Naples, is mountainous, and a much colder climate than ours. The Milan and Peidmontese silk is the best; and is much sought after in the London market. Those districts are in the north of Italy, and near the Alps. I think the production of the worm should be delayed until after the usual cold storm to be expected from the 15th to the 25th May. Our month of June would be the most desirable as a first establishment for them. If families can be induced to the growing of the cocoon, the women and children will soon produce as much from the mulberry trees about the house and along the fence, as the father can make on the clear profit of his farm. Thermometers or fires are not much used in Italy, the season giving the temperature required. The business must be simplified, and freed from too much instruction, to secure its success with us. The difficulty to extract reasons or information from the common people of the continent is so evident, and they so essentially differ from our American people in their aptitude to give reasons and explanations, that I say—do not seek or receive too much European instruction, but rely on the producible common sense of our people; this fund will not fail or be insufficient, and, with a little experience, I am sure of success in the culture of silk in our country. Induce to the growing of the cocoons, and the object will be accomplished. It is a very simple business. I shall continue my observations on this important and interesting subject, in my tour through France; but if our American merchants and dealers in silks from Italy and France, could be induced to introduce the culture of silk, and obtain from time to time information from their correspondents, they would be a host of strength in the business. I have found the *operatives* here rather a prejudiced and uncertain source for information. They work, but cannot tell the why or wherefore."

Our next extracts are from Gen. Tallmadge's letter, dated Paris, April 6th, 1836.

"In my last letter from Naples I believe I promised to say something more on the cultivation of silk. I have since travelled through Italy, and especially in the silk districts, and also through France, and have visited many of the manufactories in both countries, endeavoring to learn the details of this subject, now so interesting, and, I think, so essential to our country. The limits of a letter will, however, confine me to a few isolated remarks.

The weaving of silk after it gets into skeins, is like any other weaving of like character; it is the production of silk, and the habit of growing it, that must be acquired by our country; and it is in this view, a mine of boundless wealth, not second even to the production of cotton. The country which so lately surprised Europe by sending *eight* bales of cotton to its market, and now astonishes the world with its countless thousands, may soon exhibit a like wonder in the production of its silk.

In Calabria, which is in the south of Italy the black mulberry is principally used. In the rest of Italy the white mulberry, common to them and to France, is principally used. The north of Italy, that is between the Alps and the Appenines, produces the most and the best silk. In this region, and especially in Sardinia, near Turin, and at *Novi*, the English and French are competitors in market, to purchase their silk as the best in the world; and yet on the 9th of March, the snow was one foot and a half deep, and the streets of Novi blocked up like our Cedar street! In Calabria the silk is produced by the country people, in their families, and mostly reeled by them. There are very few factories for reeling in the Neapolitan kingdom. In Lombardy, and towards Venice, there are also establishments for reeling, yet the greater part is reeled by the families, in detail, and brought to market in the skein. In Sardinia the cocoons are mostly reeled in establishments. At Novi their reeling establishments are numerous:—I saw one, now erecting, which is a quadrangle *two hundred* feet square, and appropriated solely to reeling cocoons. They are purchased up from near Milan, and many miles distant. This is admitted to be the best silk in the world. The *red* mulberry is here principally used, and is known as the Calabria mulberry. It is described as having a dark fruit; the tree is like our *black;* and when I called it *black* mulberry, I was corrected, and told the *stain of the fruit* was *red*, and not *black*, and which gave the character of the tree. The French in addition to the *white* mulberry, have a *dwarf* white, much liked, and getting into use; but, it must be remembered, there is not in France, and scarcely in Italy, a fence, and they do not graze their fields as we do. With our habit of pasturage, the dwarf would be inadmissible. The *Chinese* mulberry is unknown in Italy. I found only a few young engrafted trees, but no experiments there, to be relied upon, to establish its superior utility. In Italy, and in France, the mulberry is generally planted near the houses, along the road sides, by division fences, and often like an open orchard. The trees are formed like a middle sized apple tree. Its shade does not injure the land. The tree in Italy is usually made to sustain a grape vine, and the field is cultivated for wheat and other crops. There is less discrimination here than you would imagine in the kind of mulberry. The French have made experiments, especially on the *Chinese;* and the opinion seems to be, that the *Chinese* mulberry will bear to have its leaves twice picked off, and thus produce two crops of silk in one year. As yet, however, there is not much use made of the Chinese mulberry, even here, and the grower of silk cannot answer as to its virtues;—but the answer is often given to me, that, as to the *quality* and the *quantity* of the silk, it is the *same* as any other mulberry; and that the quality of the silk depends on the treatment of the worm, and the care and skill in reeling. They pay less attention to the *kind* of mulberry on which it is fed than we expect. They have also *white*, and use it. *Habit* directs more in Europe than with us, and therefore I urge that our people make experiments for themselves. They should neither take nor reject any thing too quickly upon European experience. Climate and circumstances may produce a different result, and the alleged experiments of Europe may have been incorrectly or inadequately tried,

It is a peculiar and important circumstance in favor of the adaptation and fitness of our climate to the culture of silk, that, with us, the silk worm is produced at the beginning of warm weather, in May and June, by natural temperature of the season, while in Europe, and especially in Italy and France, it is produced only by artificial temperature and means. This fact is a volume in promise for our country. Fires and a thermometer are not used in the south of Italy to secure an equal temperature in the rooms of the worms, nor much used in the north of Italy, unless in the region of some snow capped mountain, or where other circumstances produce sudden inequalities of temperature. It is the same as to the south and north of France.

The books already published, by congress and our state, give the best, and indeed all the instructions which can be given on the subject; and with these, as guides, let the safe and unerring common sense of our people make experiments for themselves: and, I venture to say, the time is not far distant when America will produce silk in abundance from practical information and science, while other countries will continue to do it from habit.

On the continent, and particularly in Italy and France, when about to get out, or transplant, trees or vines, it is the usage to dig the hole about four feet square, and from two to three feet deep; and after thus breaking up the ground, it is left some months to the operation of the air, and to frost. Sometimes manure is mingled with the dirt; and when the tree is set out, the hole is filled to a level. The tree, under such circumstances, takes much firmer root, grows better and holds its upright position.

Grape vines are set out on this principle; but, more commonly, a ditch, or small canal, will be dug, three or four feet wide, and two or three feet deep, and thus open, be left exposed to weather some months. Roots, or cuttings are then planted, and the dirt filled in partially, so as to leave them to take root at least one foot below the level of the surface of the land. As the summer drought comes on, the dirt is hoed about them nearly to a level. The vines are treated upon the same principle. In the spring the ground is hoed away from the stock, so as to break off and prevent the growing of the side and upper roots; course manure is often placed in the hole, about the stock, and in the dry season the dirt is hoed over and about the stock from time to time nearly to a level. The object and effect of this treatment of the vine is, by inducing the growth of the deep and lower roots to prevent those side and upper roots from running near the surface of the earth, and which, in the spring and wet seasons, produce an excess of growth, and in the dry and summer season fail to sustain the vine, and leave the fruit to wilt and wither, or become imperfect. It is thus the roots of the grape vine are made to run so low in the ground as to allow of cultivation, for a garden or for a wheat crop, without the spade or plough reaching any of the roots of the vine. An equality of growth, in the wet or dry season, is thus in a degree secured; and the uniformity insures the maturity of the grapes. May not this delightful fruit yet be naturalized with us?

The implements of husbandry, in either Italy or France, offer not much for the American farmer. Their lands are mostly cultivated with the spade and manual labour, and when the plough is used, it is the old fashioned plough, on a pair of wheels.—Their crops and their cultivation are so different from ours, that very little can be learned from them useful to us. Silk, wine, and wheat, are their staple productions, and to an almost incredible extent; so it is in France, where the manner of cultivation, and implements of husbandry, are much the same. Wheat is now so abundant in Italy and France, and the price so low, that I found them the other day, at Marseilles, shipping wheat for the New York market! and they would do the same from all parts of Italy, but for their lack of commercial enterprise. Our farmers are now sheltered by a protecting duty, otherwise their crops would moulder in their barns; and even New York be furnished with bread from a foreign market. They have felt secure in their production, and have not regarded, as necessary to themselves, the system of protection for our domestic products. Should peace continue a few years longer in Europe, such is its surcharge of labor, and power of production, that every product of American agriculture will find foreign competition, even in our own markets at home. The wheat, both in Italy and France, greatly surprised me;—the quantity is immense, and greatly beyond my belief till actual observation; and I have travelled eight or nine hundred miles in France, and have no where found sour, dark, or *imperfect bread.* Can we do and say the same in our own country? The bread of France certainly has a decided superiority over ours.

The agriculture of France is in fine condition, and secon only to that of England. It has every abundance and the people appear prosperous and happy.—The *olive* is a valuable addition to the production of Italy and France. Our climate will not, perhaps, favor the tree, at least in the northern states; yet it is of so much value it should be encouraged.—The *olive* can be successfully engrafted on the *ash tree,* and thus, perhaps, it might be acclimated with us. Some such trees, engrafted on the ash, are said to be growing at *Pistoia,* about twenty miles from Florence. There is no inducement, in France or Italy, thus to engraft the *olive,* but the hint is certainly worthy the attention of our nurserymen and of our country.

Marseilles is a delightful city. It has the air and activity of New York, and partakes in a like commercial prosperity. The air of liberty and enterprise in the people appears in strong contrast on coming from Austria and Italy, where the mental and bodily energies of man are, but too certainly, drying up under the jealousy and despotism of absolute monarchies. The harbor of Marseilles gave a zest to our feelings in the exhibition of several American vessels, and which even the ladies of our party readily distinguished from others by their peculiar grace and beauty. Our country, in its vessels, certainly has an unrivalled excellence. I spent a day in the examination of the *Toulon* navy yard and fleet. It is an extensive naval depot, abundantly provided and pretty well arranged. It is, in one sense, the penitentiary or state prison of France. It has four thousand convicts, sentenced to hard labor; and they are allowed to solicit and receive gratuities from visitors. It has several guns intended to fire *bombs on a direct line;* these were shown with some evident exultation; four are allotted to each of the larger vessels. They are well understood by our naval men. There was not any thing else novel or different from other naval depots; and all was of an order and scale from which we have nothing to learn for our service. I was on board the *Monte Bello,* equipped and ready for sea; she mounts 120 guns; her upper decks are so much drawn in as to allow only of carronades, and on slides, for her upper tier. I am sure my national feelings do not lead me into an error, when I say that either our Franklin, or Delaware, seventy-four is equal in force and strength. I was there before our affairs with France were known to be adjusted, and was received and admitted as an American, and treated with kindness and attention.

Great efforts are made in France to advance the condition of its agriculture. It is ascertained that the increased use of the *potatoe* has diminished the consumption of wheat for bread. The raising of the *beet-root,* for the production of sugar, has, as one of its principal objects, the supplying a new production for the benefit of the farmer.—For the same reason the growing of *madder* is much encouraged, and the production of the *beet* and *madder* come in great relief to agriculture, and are made new sources of public wealth. Our farmer certainly merit the like fostering care and assistance.

I have before mentioned the use of the natural current of the rivers and principal streams of the continent as a water power for manufacturing objects, and I have no doubt but the current in the East river, at New-York, may be used for the same purposes. At *Lyons,* a water wheel is thus turned, and works a forcing pump which drives up the water of the pier about three hundred feet to a reservoir in a public garden; it there forms a *jet d'eau* and falls into a marble basin, which serves as a fountain in case of fire, and its overflow washes the streets. It is attended and worked by one man, and, but for the economy and simplicity of the whole machinery, it might be recommended for adoption at New-York and some of our public squares be thus ornamented and made useful.

The elastic power of our people in rising up from the disaster of the late fire, is cause of wonder and admiration. Their physical energies, and manly efforts in support of commercial credit, have commanded the observation and commendation of Europe.—Our affair with France awoke attention, and the attitude assumed by our country excited admiration and surprise. America is now advantageously known on the continent. Respectable and intelligent Europeans no longer ask where America is, nor inquire the costume and court language of this new people. In every society or circle an American citizen finds demonstrations which afford cause for exulting satisfaction, and increased love of his country. The fame of our success, in naval architecture and steam power, in agriculture, commerce and manufactures, in increasing wealth and universal prosperity, has gone abroad, and the subjects of monarchs are inquiring if there is not some secret magic in the free institutions of America, which works such mighty wonders."

CULTURE OF SILK IN FRANCE, &c.

Since the foregoing was put in type, we have been favored with the perusal of a letter addressed to a member of the Institute, from General Tallmadge, dated Paris, April 12, 1836. As it contains some further suggestions in relation to the culture of silk, we have asked and obtained permission to make extracts from it. He says:—

"I have in part anticipated your request in relation to the culture of silk, and have written by the previous packet—as also from Naples. In my last letter, when speaking of the planting and culture of the mulberry tree, I fear I omitted to add that pro-

prietors of land often cultivate the mulberry tree with a view to profit from the leaves.—It is common in France and Italy, to sell the leaves to families, who rear the worms, at a fixed rate; but it is more usual for indigent families to plant a certain number of trees. They furnish the leaves, feed, and take care of the worms, and return to the owner of the land one equal half of the cocoons produced, which is his share of the income, and a most convenient one it is, to be produced from the trees along the road side, and in places which do not injure his agriculture; and this kind of tenating is of immense benefit to the industrious poor."

"I am proud of the sample of silk sent me in your letter, as made in America by the power loom and have shown it to several.—The patent law of England and France allows its benefits to *aliens*, while our law is confined to citizens or resident aliens. You can therefore get a patent here at pleasure. The French are, like all Europeans, slow in acquiring new habits, or making any changes in their pursuits. From this cause in practice, the different mulberries are not heeded. They have white, from habit, and do not yet use the Chinese mulberry. We have more of the Chinese growing than France and Italy together.

"I have taken pains to obtain from the government some recent information from India, not yet published; also some recent papers from the National Institute, which, if received, shall be sent out. I attend the public institutions, and especially the weekly meetings of the National Institute and the Agricultural Society, and am much pleased.

"The science and information from the National Institute is important, and from the superior intelligence and adaptation of our people, I am sure we shall in America first practice, and reap benefits from this science. Our advancement is matter of astonishment to Europe, and it is often said to me that we keep a-head of them in all experiments reducible to practice."

In a note it is added that—"The program of the agricultural meeting, containing reports on the proceedings of the last year, I will send by some private conveyance—the medals were given out in my presence.—Our Institute need not blush."

We republish the following letter for the purpose of spreading all available information on the subject—and also with the design of correcting a slight inaccuracy in a late number, in regard to the species of beet employed. We have always felt the importance of this branch of manufacture to our country, and have sought for information from various sources. We are now happy to have it in our power to state, that we shall shortly receive from one of our friends in Europe, a detailed account of the process and machinery, embracing the latest improvements.

From the Boston Advertiser.

BEET ROOT SUGAR.

We have already published an interesting letter from Mr. Isnard, on the subject of the manufacturing of the Beet Root Sugar. We now publish another letter on the same subject, addressed by him to the President of the Agricultural Society, in answer to some inquiries made by the officers of that society, which will be found deserving of notice.—*Daily Advertiser.*

At a meeting of the Board of Trustees of the Massachusetts Society for promoting Agriculture, held 9th April, 1836:—

The President sent to the board a letter of introduction from Gen. Dearborn to him, (of the French Consul, Mr. Isnard,) with a view to the introduction of the Sugar Beet, and the mode of extracting the sugar.

Voted, That the subject be referred to the President and Mr. Gray.

A copy of the record.

BENJ. GUILD, Sec'ry.

In accordance with the above vote, the committee therein named, have had an interview with Mr. Isnard; and the following interesting letter upon the subject of the manufacturing of sugar from the white, or sugar beet, so called, has been received from him. The committee learning that this subject has of late created conversation amongst the farmers and others, have been induced to give pulicity to Mr. Isnard's letter, previously to submitting it to the board of Trustees, whose meeting stands adjourned to the 14th inst. Those of the Trustees to whom said letter has been communicated, approve of its immediate publication.

Sir,—As you have expressed a wish that the cultivators of this country might be generally informed of the principal observations made in France upon the culture of the sugar beet, and also what benefits they might derive by the making of sugar; and for my own part being desirous of fulfilling the promise I made to the public, in my first communication on the above subject, to give further information when called for; I have now the honor to transmit to you the following, which appears to me sufficient for the present, being ready at any time to enlarge on the subject, if required.

The variety of beet to which the sugar manufacturers now give the preference, is the white beet, (*Beta alba,*) imported into France from Germany; next to it is the yellow beet, (*Lutea mojor.*) The first ought to be preferred in this climate, as it stands better against frost and rotting. This variety must not be confounded with another very similar, called in French *Disette*, Scarcity Root, (*Beta silvestris,*) also white, though very often striped red and white; this last is a great deal larger, more watery, but deficient in sugar.

The choice of the best beet will not suffice; care ought to be bestowed on the cultivation, in order to enhance and to perfect its saccharine principle, and even facilitate the several processes for obtaining the sugar.

Deep light, rather sandy, but rich soil is requisite to raise an abundant crop of beet of good quality. Beets raised on a field newly manured have proved to contain salts detrimental to sugar, and which increase the difficulty of obtaining it. Good pasture land, not marshy, broken up and planted with beet, produces the most saccharine roots. The transplanting has been discontinued as more expensive, less certain, and the young plants so transplanted producing roots less perfect in shape, a matter of some consequence, owing to the subsequent mechanical operations, those roots are to be submitted to; and also owing to the aptness of the plant so transplanted to rise out of the ground while growing, which causes a great loss to the sugar manufacturer, since it has been proved by analysis that the portion of the root so exposed to light and air, is far from being so rich with sugar as the part which is under ground; hence the necessity of hoeing and earthing up the roots. Seeds ought to be laid in rows at two feet apart, that distance will allow us to perform the weeding, the hoeing and the earthing up easily, by means of a proper hoe or plough, drawn by a horse, now generally used in France.

The gathering offers nothing particular; care ought to be taken not to hurt the roots; they should be deprived of their small fibrous roots, and also of all the green part of their top to which the leaves adhere.—The stowing of a large quantity of beet deserves the greatest consideration, in order to prevent their heating; for if they vegetate the saccharine principles enter into new combinations, and sugar can no longer be obtained with the same profit.

In Germany the leaves are carefully dried and used as a fodder for cattle. In France the leaves not immediately used are left on the ground as a manure.

The expenses attending the cultivation of one acre of land planted with beet, will vary according to circumstances; every farmer is to judge for himself.

The quantity of beet gathered on one acre will also vary even from 300 to 500 bushels. A respectable farmer of this country has assured me, that 600 bushels would not be considered an extraordinary crop on a rich soil, and with proper management. Nothing in this remark ought to surprise us, for admitting the roots at 2 feet apart, 11,000 roots will be gathered on an acre. The average weight of each may be 3¼ lbs. In fact many will weigh as much as 8 lbs. In the following calculations I take for granted 350 bushels as the average crop of one acre, a bushel of beet to weigh 60 lbs.

As to the benefits which a farmer will derive by the cultivation of one acre with beet for the making of sugar, they can be stated as follows:

800 lbs. good Muscovado Sugar valued at 8 cents per pound,	$64
50 gallons of Molasses, good for distillers, at 16 cents per gal.	8
4 tons of Pumice, a good food for cattle, $3 per ton,	12
1 ton of dry leaves, or their value as manure,	5
Total,	$89

Owing to the want of skill and experience, I admit at only 4 lbs. the quantity of sugar obtained, though 5 lbs. is generally obtained, and even some manufacturers obtain as much as 7 lbs. of sugar for every 100 lbs of beet. From this amount ought to be deducted about $5 for sundry ingredients for manufacturing purposes; also the cost of one cord of wood for fuel. The several operations will be performed by the farmer at his leisure time. The expenses

for tools, apparatus, &c. &c., can be valued at about $120, but should the works be enlarged so as to work a doub'e or greater qnantity, th se expenses would by no means increase in the same ratio.

Should a company be formed to carry on conjointly the cultivation and the manufacture of sugar on a large scale, other benefits would be derived—1st. By the improving of a large tract of land. 2d. By the refining of the sugar at a trifling additional expense. 3d. By the fattening of cattle. 4thly. Getting the most of sugar at the least expense possible, by being enabled to secure the service of competent superintendents, and by making use of labor-saving machines moved by steam engines; all of which I am ready to demonstrate on application made to me.

In my first communication on this subject, I have stated, that the pumice of beet was a better food for cattle than beet in their natural state; to this assertion objections have been made; allow me, sir, to support my position by a few observations more, inasmuch as they will impart a more correct knowledge of the benefits that can be expected by some new improvement in the process of making the sugar of beet.

By chemical analysis 100 lbs. of beet root prove to contain 85 to 90 lbs. of water, 6 to 11 lbs. of sugar, 1 to 2 lbs. ligenous substance. Pectic acid, albumic, salts, earth, together 2 to 2½ lbs. The greater the proportion of water, the less is the proportion of sugar. The average quantity of juice obtained from 100 lbs. of beet is about 70 lbs.; the weight of the pumice left is 30 lbs. The quantity of sugar extracted from 100 lbs. of good beet by those who are skilled in the process, is now 7 lbs.; but from 1 to 2 lbs. of it is mixed in the molasses; consequently the pumice is proportionably more rich in saccharine principle than the beet. In its natural state the beet holds 85 per cent of water; the juice obtained from it holds 63 lbs. of water; then 22 lbs. of water remain in the 30 lbs. of pumice; consequently in less proportion than in the beet. This is not all, in the pumice the water is *almost solidified*, as it has been observed, by the pectic acid, which is combined with it, and contributes in a great measure to render the pumice so nutritious; if added to this, that the puuice is easily chewed and better digested, it is not surprising that cattle relish it more than the common beet, and thrive exceedingly well when fed upon it.

The following is fact: the first year I manufactured sugar in France, I offered the pumice for sale, for what milkmen were pleased to give; they soon finding the benefit derived from it, offered more for it than for common beets. Wishing to ascertain what price they were willing to pay for it, I asked as much as one half more than the price I paid for common beet (all by the weight) and yet found a sale for it. They said that 100 lbs. of pumice went further than an equal weight of beet; that they were saved the trouble of washing and cutting them; that when feeding cows with pumice they could save the dry food they were obliged to give them, when feeding them with beet.

Should these observations, for which I beg your indulgence, be in any way deemed beneficial for the promotion of this new brnnch of agricultural industry in this country, they are, sir, at your disposal for whatever circulatien you may be pleased to give them.

I have the honor to be,
With the highest respect, sir,
Your most obedient servant,

MAX. ISNARD,
French Vice Consul for Boston

To the Hon. L. WINTHROP.

Boston, April 15, 1836.

AGRICULTURE, &c.

THE BANIAN TREE.

This tree which is also called the Burr tree, or the Indian Fig, is one of the most curious and beautiful of nature's productions in the genial climate of India, where she sports with the greatest variety and profusion. Each tree is in itself a grove; and some of them are of an amazing size and extent, and, contrary to most other animal and vegetable productions, seem to be exempt from decay. Every branch from the main body throws out its own roots; at first, in small, tender fibres, several yards from the ground; these continually grow thicker, until, by a gradual descent, they reach the surface, and there stick in, they increase to large trunks, and become parent trees, shooting out new branches from the tops. These, in time, suspend their roots, and receiving nourishment from the earth, swell into trunks, and shoot forth other branches; thus continuing in a state of progression, so long as the earth, the first parent of them all, contributes her sustenance.

A Banian tree, with many trunks, forms the most beautiful walks, vistas, and cool recesses, that can be imagined. The leaves are large, soft, and of a lively green; the fruit is a small fig, when ripe, of a bright scarlet, affording sustenance to monkeys, squirrels, peacocks, and birds of various kinds, which dwell among the branches.

The Hindoos are peculiarly fond of the Banian tree; they consider its long duration, its outstretching arms, and its overshadowing beneficence, as emblems of the Deity, and almost pay it divine honors. The Bramins, who thus find a fane in every sacred grove, spend much of their time in religious solitude, under the shade of the Banian tree; they plant it near their temples or pagodas; and in those villages where there are no structures erected for public worship, they place an image under one of these trees, and there perform a morning and evening sacrifice. The natives of all casts and tribes are found recreating in the cool recesses, beautiful walks, and lovely vistas of this umbrageous canopy impervious to the hottest beams of a tropical sun. These are the trees under which a sect of naked philosophers, called Gymnosophists, assembled in Arian's days, and this historian of ancient Greece presents a true picture of the modern Hindoos. In winter, he says, the Gymnosophists enjoy the benefit of the sun' rays in the open air; and in summer' when the heat becomes excessive, they pass their time in cool and moist places, under large trees, which, according to the account of Nearchus, cover a circumference of five acres, and extend their branches so far, that ten thousand men may easily find shelter under them.

On the banks of the river Narbuddy, in the province of Guzzarat, is a Banian tree, supposed by some persons to be the one described by Nearchus, and certainly not inferior to it. It is distingnished by the name of Cubbeer Burr, which was given it in honor of a famous saint.—High floods have, at various times, swept, away a considerable part of this extraordinary tree; but what still remains, is nearly two thousand feet in circumference, measuring round the principal stems; the overhanging branches, not yet stuck down, cover a much larger space, and under it grow a number of custard, apple, and other fruit trees. The large trunks of this single tree amount to three hundred and fifty; and the smaller ones exceed three thousand; every one of these are constantly sending forth branches and hanging roots, to form other trunks, and become the parents of a future progeny. The Cubbeer Burr is famed throughout Hindoostan not only on account of its great extent, but also of its surpassing beauty. The Indian armies generally encamp around it; and at stated seasons, solemn Jattaras, or Hindoo festivals, to which thousands of votaries repair from every part of the Mogul empire, are there celebrated. It is said that seven thousand persons find ample room to repose under its shade. It has long been the custom of British residents in India, on their hunting and shooting parties, to form extensive encampments, and spend weeks together under, this delightful and magnificent pavilion, which affords a shelter to all travellers, particularly to the religious tribes of the Hindoos.

It is generally filled with greenwood pigeons, doves, peacocks, and a variety of feathered songsters—with monkeys, which both divert the spectator, by their antic tricks, and interest him by the paternal affection they display to their young offspring, in teaching them to select their food, and to exert themselves in jumping from bough to bough. This tree affords not only shelter, but sustenance to all its inhabitants, being covered amidst its bright foilage with small figs, of a rich scarlet, on which they all regale with as much delight as the lords of the creation on their most costly fare, in their parties of pleasure.

This tree, which is doubtless one of the most singular and magnificent objects in the vegetable kingdom, appears to be a world in miniature, in which thousands both of the human beings and of the inferior tribes that traverse the earth and air, may find ample accommodation and subsistence. What a striking contrast does it present to the forests of trees, or mushrooms, which are perceived by the

aid of the microscope, in a piece of mouldiness—every plant of which is several hundred times smaller than the point of the finest needle! Yet both are the effect of the agency of the same all-wise and omnipotent Being. And what an immense variety of gradations is to be found in the vegetable world, between these two extremes—every part of the vast interval being filled up with flowers, herbs, shrubs, and trees of every color, form, and size, and in such vast multitudes and profusion, that no man can number them.

THE ICE TRADE BETWEEN AMERICA AND INDIA.

The arrival of the Tuscany with a cargo of ice from America forms an epoch in the history of Calcutta worthy of commemoration, as a facetious friend remarked, in a medal of *frosted* silver. In the month of May last we received a present of some ice from Dr. Wise at Hugli, (whose efforts have been so long directed to the extension of its manufacture by the native process,) as a proof that the precious luxury might be preserved by careful husbandry until the season when its coolness was the most grateful, little did we then contemplate being able to return the compliment, with a solid lump of the clearest crystal ice at the conclusion of the rains! nor that we should be finally indebted to American enterprise for the realization of a pleasure for which we have so long envied our more fortunate countrymen in the upper provinces; nay, even the beggars of Bokhara, who in a climate at times more sultry than ours, according to Lieutenant Burnes, "purchase ice for their water, even while entreating the bounty of the passenger." Professor Leslie with his thousand glass exhausters, and his beautiful steam-air pumps, tantalized us with the hopes of a costly treat, and ruined poor Taylor, the bold adopter of his theory; but Science must in this new instance, as on many former occasions, confess herself vanquished or forestalled by the simple practical discovery, that a body of ice may be easily conveyed from one side of the globe to the other, crossing the line twice, with a very moderate loss from liquefaction.

We are indebted to Mr. J J. Dixwell, the agent of the proprietors, for the following interesting particulars relative to the Tuscany's novel cargo, and the mode of shipping ice from America for foreign consumption.

The supplying of ice to the West Indies and to the southern States of the Union, New-Orleans, &c., has become within these few years an extensive branch of trade under the successful exertions of its originator, Frederick Gudar, Esq., of Boston, with whom S. Austen, Esq., and Mr. W. C. Rogers, are associated in the present speculation.

The ponds from which the Boston ice is cut, are situated within ten miles of the city; it is also procured from the Kennebec and Penobscot rivers, in the state of Maine where it is deposited in ice-houses on the banks and shipped from thence to the capital. A peculiar machine is used to cut it from the ponds in blocks of two feet square, and from one foot to eighteen inches thick, varying according to the intensity of the season. If the winter does not prove severe enough to freeze the water to a convenient thickness, the square slabs are laid again over the sheet ice, until consolidated and so recut. The ice is stored in warehouses constructed for the purpose at Boston.

The shipping it to the West Indies, a voyage of ten or fifteen days, little precaution is used. The whole hold of the vessel is filled with it, having a lining of tan, about four inches thick, upon the bottom and sides of the hold; and the top lifts covered with a layer of hay. The hatches are then closed, and are not allowed to be opened till the ice is ready to be discharged. It is usually measured for shipping, and each cord reckoned at three tons; a cubic foot weighs 58¼ lbs.

For the voyage to India, a much longer one than had been hitherto attempted, some additional precautions were deemed necessary for the preservation of the ice. The ice hold was an insulated house, extending from the after part of the forward hatch to the forward part of the after hatch, about fifty feet in length. It was constructed as follows:—a floor of one inch deal planks was first laid down upon the dunnage at the bottom of the vessel; over this was strewed a layer, one foot thick of tan; that is, the refuse bark from the tanners' pits, thoroughly dried, which is found to be a very good and cheap non-conductor: over this was laid another deal planking, and the four sides of the ice hold were built up in exactly the same manner, insulated from the sides of the vessel. The pump, well, and main-mast, were boxed around in the same manner.

The cubes of the ice were then packed or built together so close as to leave no space between them, and to make the whole one solid mass: about 180 tons were thus stowed. On the top was pressed down closely a foot of hay, and the whole was shut up from access of air, with a deal planking one inch thick nailed upon the lower surface of the lower deck timbers; the space between the planks and deck being stuffed with tan.

On the surface of the ice, at two places, was introduced a kind of float, having a guage rod passing through a stuffing-box in the cover; the object of which was to denote the gradual decrease of the ice, as it melted and subsided bodily.

The ice was shipped on the 6th and 7th of May, 1833, and discharged in Calcutta on the 13th, 14th 15th, and 16th of September, making the voyage in four months and seven days. The amount of wastage could not be exactly ascertained from the sinking of the ice-guage; because, on opening the chamber, it was found that the ice had melted between each block, and not from the exterior only, in the manner of one solid mass, as was anticipated. Calculating from the rods, and from the diminished draught of the ship, Mr. Dixwell estimated the loss on arrival at Diamond Harbor, to be fifty-five tons, six or eight tons more being lost during the passage up the river; and probably about twenty in landing.—About one hundred tons, say three thousand maunds, were finally deposited in the ice-house on shore; a lower room in a house at Brightman's Ghaut; rapidly floored, and lined with planks for the occasion.

The sale has not, we believe, been so rapid as might have been expected, amounting to no more than ten maunds per diem, although Mr. Rogers has fixed the price at the low rate of four annas per seer, one half of the price estimated for the Hugli ice, which was calculated to be somewhat cheaper in proportion than saltpetre. The public requires to be habituated to it, and to be satisfied of the economy of its substitution for the long-established process of cooling. There may also be some doubts of the best mode of preserving so fleeting a commodity; but on this head we cannot but advise an imitation of the methods pursued on a large scale on board of the Tuscany. For the application of the ice to the purposes of cooling ample directions have been given in the "Gleanings of Science," vol. iii. p. 120. A box or basket, or tin case, with several folds of blankets, or having a double case lined with paddy chaff, or any non-conducting substance, will preserve the ice until wanted; and for cooling water or wine, the most effectual method of all is to put a lump of the clear crystal into the liquid. The next best is to spread fragments upon the bottles laid horizontally, and have them wrapped in flannel for a couple of hours.

So effectual was the non-conducting power of the ice-house on board, that a thermometer placed on it did not differ perceptibly from one in the cabin. From the temperature of the water pumped out, and that of the air in the rim of the vessel, Mr. Dixwell ascertained that the temperature of the hold was not sensibly affected by the ice. Upon leaving the tropic, and running rapidly into higher latitudes, it retained its heat for some time; but after being several weeks in high latitudes, and becoming cooled to the temperature of the external air and sea, it took more than ten days in the tropics before the hold was heated again to the tropical standard.—*London Mechanics' Magazine.*

SPECIFICATION OF THE PATENT GRANTED TO JOHN BIRD, OF BIRMINGHAM, FOR AN IMPROVED METHOD OF MAKING AND COMPOUNDING PRINTER'S INK, PAINTS, AND OTHER PIGMENTS. SEALED OCTOBER 15, 1835.

My improved method of making and compounding printers' ink, paints, and other pigments is as follows: I take a certain portion of mineral earth or matter found in great abundance on my estate at Dinas Mowddwy in Merionethshire, in North Wales, and other places; which mineral earth or matter, I first wash clean from every portion of slate or other debris, and which after such washing becomes a very fine black impalpable powder if dried, or a very fine paste if wet. This black deposit is a compound prepared by nature consisting of the following substances, and in the following proportions or some like proportions viz., silica 46, alumina 42, and coaly matter 12.

In order to make printers' ink, I take as large a portion of this prepared compound as I deem necessary, and mix and grind it up with boiled oil, or prepared oil, usually nsed in the making of inks, which when so prepared, is my improved method of making and compounding printers' ink. To make ink used in copper-plate printing, I adopt the method now in use, substituting the above-mentioned compound, in lieu of Franckfort black, or what is usually designated by that name. I then, in order to make and compound paints and other pigments, take in those proportions I find necessary of the above matter, and mix and compound it with oils, spirits, or any other substance requisite for making paints and other pigments, under which last descrip- I include the making of blacking.

In the manufacture of ink, blacking paints or other pigments, I do not confine myself to any particular quantities of the ingredients above-mentioned, but take any quantities thereof, which are found most desirable,

I claim no exclusive privilege for the use of any other matter in making and compounding inks, paints or other pigments, except the use of the compound above described, and for the use of the said compound, and for mixing it in any way, or in any proportion convenient for the making inks, paints, and other pigments, I do hereby claim the exclusive privilege. In witness whereof, &c.

Enrolled April 15, 1836.

From the Journal of the American Institute.

THE DANFORTH, OR CAP SPINNER.

This machine was invented in 1828, by Charles Danforth, a native of Massachusetts, and is probably the greatest improvement on the throstle that has been made since the days of Sir Richard Arkwright. Mr. D. resided at the time in Rockland county, N. Y. He had been employed for a number of years as an operator of cotton machinery, and having had experience on the common throstle as well as the Waltham dead spindle, he was aware that the two greatest impediments in these modes of spinning, were the difficulty of making the flyer exactly balanced, and the drag of the bobbin by the strength of the yarn. He thought if any plan could be contrived to wind the yarn on the bobbin without the use of the flyer, it would enable him to run the bobbin very fast. After some reflection it occurred to him that a bobbin running on a fixed spindle, and circumscribed by a smooth stationary polished ring, suspended from or fixed to the top of the spindle, might produce the desired result.

He accordingly proceeded to make the experiment. He first permanently secured a throstle spindle in the frame to prevent its turning; and after cutting the curls from the prongs of the flyer, rivetted to them a smooth ring which passed round the bobbin. He then turned a groove in the lower head of the bobbin, for the driving band to run in, and having put all together, and put the bobbin in motion, he fixed up his thread, and filled a bobbin without any difficulty.

It was perceived in this first attempt, that the tension on the yarn while spinning was very light, and the yarn wound soft on the bobbin; it was therefore thought that the principle would be good for spinning weft, which requires to be slack twisted. He therefore constructed his first machines for weft, and after making various experiments, fixed on the present mode of making and supporting the stationary ring, which is a cap similar in shape to an inverted tumbler, with a polished steel ring on the bottom, having a conical socket in the top, made to fit a small cone on the top of the spindle.

The spindle is of sufficient length to admit the bobbin to traverse its length on it, and is secured to the spindle rail at the bottom. It was found that the bobbin, which is of wood, running at the rate of 7000 revolutions per minute, on a fixed spindle, was apt to get dry, make a loud noise, and cause the bobbin to wear:—to obviate this difficulty, a warve was made, with a tube on the top of sufficient length to pass through the bobbin, on which the bobbin is placed and revolves with it; this warve takes the friction off the bobbin, and as it is made of metal, is durable, and runs without noise.

Mr. D. has patented his invention in this country, and caused patents to be taken in England, and other European states.

This mode of spinning has now been thoroughly tested, both for warp and weft, and is found to be capable of producing full 40 per cent. more yarn, on counts or numbers, from No. 14 to 50, than any other mode heretofore known. It is generally approved of by the spinners who have tried it, and has gone into use, both in this country as well as Europe, more rapidly than any other improvement in spinning has before been known to do.

The principle is such, that instead of making the thread drag the bobbin, the bobbin is made to drag the thread, and the resistance of the atmosphere, together with the slight friction on the lower edge of the ring, produces that retardation necessary for winding the yarn on the bobbin, in consequence of which the tension on all the threads is perfectly uniform, and at the same time delicate, giving a great uniformity and elasticity to the yarn.

This machine requires much less power to drive it than the common throstle.

They are made and sold by Messrs. Godwin, Clark & Co., at their shop in Patterson, N. J., who are the proprietors of the patent, and manufacturers of all kinds of cotton and woollen machinery.

SPECIFICATION OF A PATENT FOR A DOFFER FOR WOOL CARDING MACHINES. GRANTED TO STEPHEN R. PARKHURST, PROVIDENCE, RHODE ISLAND, OCTOBER 10th 1835.

To all persons to whom these presents shall come, be it known, that I, Stephen R. Parkhurst, of Providence, in the county of Providence, and State of Rhode Island, and Providence Plantations, have invented a new and useful doffer, with corresponding rolls, for the wool card, called a finisher.—Instead of a continuous cylinder, this doffer is composed of a set of wheels, or pulleys, of equal diameter with the common doffer, covered with a card in the same way, of three or four inches thickness at the rims, to revolve like the common doffer, placed upon their shaft, an inch, or an inch and a half, apart, and a small angle and parallel with each other, and making such an angle with the shaft as that the spaces between may be fully compensated in their revolution, and the whole surface of the main cylinder be passed over by them; and their rims, or outer surfaces, must be parallel to to their shaft, so as to conform to the surface of the main cylinder. Next, there is a set of pulleys, which I call division rollers; these may be about four inches in diameter, for a common doffer, of the same thickness with the spaces between the different rims, or pulleys, of the doffer, placed upon their shaft at the same angle, turned by a belt, or gear placed before the doffer, with their shaft a little lower than the shaft of the doffer, and so placed that their outer edges will be a little within the rims of the doffer, for the purpose of keeping the wool on the different parts, or wheels, of the doffer, entirely separate, as it is taken off by the top rolls, hereinafter described. The next are a set of pulleys, or wheels, or rims, which I call the top rolls; they are equal in number to the different rims of the doffer, four or five inches in diameter; they may be a little less in thickness than the width of the different rims of the doffer, so that the division rolls may revolve freely between them, placed so as to revolve in contact with their correspondent rims of the doffer, for the purpose of taking the wool from it, and so placed as that they will so bear upon the shaft of the division rolls as to be turned by it. A comb, if necessary, may be attached to this doffer, to clear the wool from it. The wool taken from the doffer by these top rolls, kept in separate laminæ, or flakes, by the division rolls, drawn over the shaft of the division rolls, may be passed through a tube, or a belt, and then run on a spool, or spools; or by a flyer properly rplaced, it may at once be twisted into a thread. By regulating the feed of the card, and the speed of the division rolls, the size of the roping, and of thread, i. e. the fineness of them, may be regulated, or adjusted, to suit the work required.

I claim as my invention, and not before known, the doffer before described, together with the top rolls, and division rolls, to correspond with it.

STEPHEN R. PARKHURST.

From the London Repertory of Patent Inventions.

SPECIFICATION OF THE PATENT GRANTED TO HENRY BOOTH, OF LIVERPOOL, FOR CERTAIN IMPROVEMENTS IN LOCOMOTIVE ENGINES AND RAILWAY CARRIAGES. SEALED JANUARY 23, 1836.

My improvement applicable to railway carriages I declare to be a new mode of connecting the carriages together, by which is effected an increased steadiness and smoothness of motion at high velocities, and which consists in an improved connecting apparatus, by the action of which the buffers of the separate carriages of a train held in contact with each other, so as to prevent that independent lateral and serpentine motion, which railway carriages moving at high velocities assume when they are attached together in the usual way by a simple draw chain.

Description of the Drawing.—Fig. 1, shows the mode in which railway carriages have usually been attached to each other by a simple chain, the buffers of one carriage not coming in contact with those of another, but each carriage being allowed, when moving onwards, a lateral oscillating motion.

Figs. 2 and 3, show the improved mode of connection for which I claim my patent. A, is the connecting chain attached to the draw bar of each carriage, and consists of a double working screw (working within two long links or shackles,) the sockets of which are spirally threaded to receive the screw bolts which are fastened together by a pin and cotter—so that by turning the arm or lever, z, of the said screws, the connecting apparatus is lengthened or shortened at pleasure, to the extent of the long links or shackles above alluded to, in which they work. This screw chain being placed on the hooks, or turned up ends of the carriage draw bars (D), the buffers (B) of each adjoining carriage being first brought close or

nearly close together, the lever (z) is turned round a few times till the draw bars (D) are drawn an inch or two beyond their shoulders, on the face of the carriage frame (c), stretching the draw springs (to which the draw bars are attached), to the extent of a fourth or fifth part of their whole elasticity; and by that degree of force attaching the buffers of the adjoining carriages together, and giving by this means, to a train of carriages, a combined steadiness and smoothness of motion at rapid speeds, which they have not, when the buffers of each carriage are separate from those of the adjoining carriage. w, is a weight to keep the lever in a vertical position and prevent the unscrewing of the chain when in action.

Now I do not claim as new the separate parts before described of the buffers, screw chain, or draw-bars, attached to a draw spring, but I claim the combination and joint action of those parts as described, and the consequent close, but elastic attachment of the carriages to each other, which constitutes my improvement applicable to railway carriages.

And my improvement applicable to the locomotive engines which draw the railway carriages, I declare to be a new mode of checking the speed of the engine, or stopping it altogether, which is effected by introducing a throttle valve, slide, or damper, into the exhausting steam pipe of the engine, commonly called the blast pipe, which is usually placed in the chimney, in front of the engine; and which throttle valve may be most conveniently introduced where the two exhausting pipes are united into one, below the place where the pipe is contracted in area for the purpose of producing a blast to the furnace. From the throttle valve must proceed a rod or long handle extending through the chimney to the back part of the boiler, so as to lie within convenient reach of the engine-man, who by moving the said handle, can close the slide or throttle valve, either partially or altogether as may be required. And the throttle valve need not be altogether steam tight, but should be made to work freely in its place. The engine-man when he wishes to stop or slacken the speed of his engine, closes or contracts his throttle valve without shutting off the steam in its passage from the boiler to the engine. The pistons, by that means, are speedily, but not suddenly or violently checked, and the driving wheels of the engine no longer revolving, or revolving very slowly, the engine is soon brought to a stand. Now I do not claim as new, any particular kind of throttle valve, which may be left to the judgment of the engineer, provided it be so constructed that when open the steam way be not contracted, but may allow the steam to escape freely as if no valve or damper were introduced. But I claim the introduction of a throttle valve, or damper, into the exhausting steam-pipe of a locomotive engine, by closing or contracting which the engine-man can check or stop his engine at pleasure. In witness whereof, &c.

Enrolled March 21, 1836.

SPECIFICATION OF A PATENT FOR A MACHINE FOR HULLING COTTON AND OTHER SEEDS. GRANTED TO JOHN AMBLER, JR. CITY OF PHILADELPHIA, NOVEMBER 26TH, 1835.

To all whom it may concern, be it known, that I, John Ambler, Jr. of the city of Philadelphia, in the State of Pennsylvania, have invented an improved machine for hulling and cleaning cotton and other seed which I denominate the Metallic Cotton Seed Huller, and that the following is a full and exact description thereof.

Upon an iron shaft, revolving horizontally, I place two, or any other convenient number of steel or iron disks, or circular plates of metal, so as to run with perfect truth upon the shafts; disks of eighteen inches in diameter, I have found to answer the purpose perfectly well. By means of a pointed chisel I raise teeth, in the manner of rasp teeth, on each side of these revolving disks, or I groove, or roughen them in any other manner calculated to produce the intended effect. The disks, as they revolve, pass through the flat bottom of a hopper, by which they are surmounted, projecting above the said bottom about one third of their diameter. Steel plates, cut like the disks, are placed on each side of them; the upper edges of these plates are on a level with the bottom of the hopper, and they extend down to the lower part of the revolving disks, covering about one-fourth part of the face thereof, this having been found sufficient to effect the hulling, perfectly.—These latteral plates are attached to adjustable sliding bars, or fixed in any other way which will admit of their distance from the disks being regulated according to the kind of seed to be hulled. It has been found best not to increase the opening between the plates and disks at the upper edge, but to preserve their parallelism throughout, so that but one seed can find its way between them at a time.

The seeds and hulls fall upon a sloping skreen, or riddle, which is made to shake, and to carry the portion which does not pass through the riddle to a revolving picker, placed at one end of the frame; this picker, and the hollow segment within which it revolves, are set with teeth in the manner of a picker for wool, and serve to separate the matted portion of the hulls, cotton, and seed, so that the lighter portion may be driven off by a revolving fan placed at the lower part of the machine for the purpose of cleaning the hulled seed.

The riddles, screens, shakers, fan, &c. which I employ, do not differ from such as are in common use for cleaning grain and other seed, and do not, therefore, require to be particularly described, as they make no part of my invention, and may be variously modified, or used separately from the hulling apparatus.

What I claim as my invention, and wish to secure by letters patent, is the hulling of cotton, and other seed, by means of revolving disks, or plates of steel, or other metal, made and operating substantially in the manner herein before set forth.

JOHN AMBLER, JR.

Journal of the Franklin Institute.

Specification for a Patent for an improvement in the Rearing of Silk Worms; Granted to GAMALIEL GAY, *Poughkeepsie, Dutchess county, New York, Oct.* 6, 1835.

To all to whom these presents shall come, I, Gamaliel Gay, of the town of Poughkeepsie, in the county of Dutchess, and state of New York, send greeting.

The hurdles for rearing and feeding silk worms upon, are, or should be, made on a horizontal, four-sided frame, of convenient width and length, and bottomed with cane, or twine, either reticulated, or having interstices between each slat of the cane, or thread of twine; which meshes, or interstices, should be of such dimensions that the silk worm will lie and feed upon them, and the litter of the worms fall through.

Now, be it known, that I, Gamaliel Gay, have invented, and applied to use, a revolving apron, for receiving upon it, and removing, the litter of the silk-worms, which falls through the hurdles, as above mentioned. The specification of which new and useful invention, for receiving and removing the litter of silk worms, as follows:

The revolving apron for a single hurdle, is constructed by placing in a frame, or otherwise at, and immediately under each end of the hurdle, a roller, or cylinder, in length equal to the width of the hurdle; over these cylinders, or rollers, extending from the outside of the periphery of the one, over and around that of the other is affixed an endless apron of cloth, or other flexible substance, equal, at least in width, to the width of the hurdle. This apron being drawn tight around the rollers, and the ends fastened together, is made to revolve around both rollers, by turning them by a crank affixed to the axle of one of them, or by otherwise revolving the rollers. The endless apron being thus constructed, receives the litter from the hurdle as it falls through, which litter, by causing a semi-revolution of the apron, is removed from under the hurdles, and caused to fall in a heap at one and either end of the hurdles, and may be suffered to fall from the apron either upon the floor, or into a vessel placed at, and partly under, the end of the hurdle, and below the outer periphery of the roller.

In case two or more hurdles be placed in tiers, one above the other, the same apron may be used, in which case an endless and separate apron is required for each hurdle; but the best method, the most convenient and least expensive form of apparatus, and which I claim as a constituent part of my invention, is constructed as follows. Let there be rollers, or cylinders, affixed under each end of each hurdle, the same as in case of a single hurdle; to one roller, below the lower hurdle, attach one end of an apron, of the kind and proportionate width first above specified; let this apron pass under the opposite roller, over the roller next immediately above that, under the roller next immediately above the first roller to which the apron is attached, over the next above roller, and under the next opposite one; and so on according to the number of hurdles in the tier, until the apron reaches the last roller to which the apron should be attached, after adding to the length of the apron at least the length of one of the hurdles, which should be rolled upon the last mentioned roller. The apron thus passing under each hurdle, receives all the litter falling from each, which litter is discharged, part at one end, and part at the other end of the hurdles, by turning the first mentioned roller so as to wind over and around it a quantity of the apron equal to the length of the above hurdle, which winding causes an equal quantity of the apron to unwind from the roller to which the other end of the roller is attached; after the litter is thus discharged from the

apron, the apron is, in part, to be again wound round the upper roller, as first above mentioned, so as to remain until the litter is again discharged.

What I claim as my improvement, and wish to secure by letters patent, in the rearing of silk worms, is the application of a revolving apron, or aprons, placed under the hurdles upon which the worms are fed, for the purpose of receiving and removing the litter falling from them; and this I claim, whether the same be made exactly in the way described, or in any other, operating substantially on the same principle, and by which a similar effect is produced.

GAMALIEL GAY.

Household Manufacture of Sugar.—A remarkable proof of the facility with which beet-root sugar manufactories may be established is presented at this moment at Wallers, in the department du Nord. Four of the villagers, by advancing 50 francs each, have formed a joint capital of 200 francs, and with this they produced between 40 and 50 lbs. of sugar, of rather inferior quality, a day. They employ curry-combs to rasp the beet-roots, which they put into a napkin-press to extract the juice, and then boil the syrup in common culinary boilers.

GRAIN.—The Richmond Enquirer says that the wheat crop generally turns out even worse than was expected. There is straw enough; but the heads are withered, and yield comparatively few grains. We are assured that some of the farmers will not make seed wheat—others have ploughed up their fields without reaping—many will not make half crop; others, not a third or fourth. The ravages from various causes, the fly, the wet, smut, freshet, &c., &c., are more or less felt by almost all. The complaint extends to both sides of the mountains in Virginia. But the corn looks well, and the oats are very fine.

The Baltimore American of Friday last publishes a letter from Gloucester Court House, Va., dated July 9, which states that the crop of wheat is so very indifferent that doubts are entertained whether a single bushel of the first quality can be obtained in the whole county. The average will not be more than equal to the fourth of a crop, and that fourth the poorest stuff that can be well imagined: that many of the farmers do not consider the crop as worth the trouble of harvesting:—and that the corn crop is very unpromising.

The Alexandria Gazett has the following notice of the crops in the counties of Virginia mentioned therein:

We learn from a gentleman who has recently visited the counties of Fairfax, Prince William, Fauquier, and Loudoun, that the wheat crop in the three first named counties will be from half to two thirds of an average one, Loudoun not so good. In Frederick county the crop is represented as very indifferent, and in Jefferson, Berkely, and many other counties beyond the Blue Ridge, it is said to be almost a total failure. The rye crop is generally very indifferent. Of the corn it is too early to judge, as much yet depends upon the weather—at present the corn, though short, looks in a flourishing state. With seasonable weather and the absence of early frost it may partially remunerate the farmers for their loss in the wheat and rye crops. The oat crop is an abundant one.

We conversed on Tuesday last with a gentleman of Martinsburg, who assured us that in many fields in that section of country the seed would not be gathered.

JOURNAL OF THE AMERICAN INSTITUTE.—We certainly owe an apology for having so long delayed to notice, and call attention to, this very interesting and valuable periodical. It was commenced in October last, by the Managers of the American Institute, and it has, as we are informed, and as it certainly deserves to do, progressed steadily in its course of usefulness. We wish it, and all other periodicals devoted to useful information, continued and abundant prosperity.

FRAME BRIDGES.

THE subscriber would respectfully inform the public, and particularly Railroad and Bridge Corporations that he will build Frame Bridges, or vend the right to others to build, on Col. Long's Patent, throughout the United States, with few exceptions. The following sub-Agents have been engaged by the undersigned who will also attend to this business, viz.

Horace Childs,	Henniker, N. H.
Alexander McArthur,	Mount Morris, N. Y.
John Mahan,	do do
Thomas H. Cushing,	Dover, N. H.
Ira Blake,	Wakefield, N. H.
Amos Whitemore, Esq.,	Hancock, N. H.
Samuel Herrick,	Springfield, Vermont.
Simeon Herrick,	do do
Capt. Isaac Damon,	Northampton, Mass.
Lyman Kingsly,	do do
Elijah Halbert,	Waterloo, N. Y.
Joseph Hebard,	Dunkirk, N. Y.
Col. Sherman Peck,	Hudson, Ohio.
Andrew E. Turnbull,	Lower Sandusky, Ohio.
William J. Turnbull,	do do
Sabried Dodge, Esq.,	(Civil Engineer,) Ohio.
Booz M. Atherton, Esq.	New-Philadelphia, Ohio.
Stephen Daniels,	Marietta, Ohio
John Rodgers,	Louisville, Kentucky.
John Tillison,	St. Francisville, Lous'a.
Capt. John Bottom,	Tonawanda, Penn
Nehemiah Osborn,	Rochester, N. Y.

Bridges on the above plan are to be seen at the following localities, viz. On the main road leading from Baltimore to Washington, two miles from the former place. Across the Metawamkeag river on the Military road, in Maine. On the National road in Illinois, at sundry points. On the Baltimore and Susquehanna Rrailroad at three points. On the Hudson and Patterson Railroad, in two places. On the Boston and Worcester Railroad, at several points. On the Boston and Providence Railroad, at sundry points. Across the Contocook river at Hancock, N. H. Across the Connecticut river at Haverhill, N. H. Across the Contoocook river, at Henniker, N. H. Across the Souhegan river, at Milford, N. H. Across the Kennebec river, at Waterville, in the state of Maine.—Across the Genesse river, at Mount Morris, New-York, and several other bridges are now in progress.

The undersigned has removed to Rochester, Monroe county, New-York, where he will promptly attend to orders in this line of business to any practicable extent in the United States, Maryland excepted.

MOSES LONG.
General Agent of Col. S. H Long.
Rochester, May 22d, 1836. 19y-tf.

PATENT RAILROAD, SHIP AND BOAT SPIKES.

☞ The Troy Iron and Nail Factory keeps constantly for sale a very extensive assortment of Wrought Spikes and Nails, from 3 to 10 inches, manufactured by the subscriber's Patent Machinery, which after five years successful operation, and now almost universal use in the United States, (as well as England, where the subscriber obtained a patent,) are found superior to any ever offered in market.

Railroad Companies may be supplied with Spikes having countersink heads suitable to the holes in iron rails, to any amount and on short notice. Almost all the Railroads now in progress in the United States are fastened with Spikes made at the above named factory—for which purpose they are found invaluable, as their adhesion is more than double any common spikes made by the hammer.

*** All orders directed to the Agent, Troy, N. Y., will be punctually attended to.

HENRY BURDEN, Agent.
Troy, N. Y., July, 1831.

*** Spikes are kept for sale, at factory prices, by I. & J. Townsend, Albany, and the principal Iron Merchants in Albany and Troy; J. I. Brower, 222 Water street, New-York; A. M. Jones, Philadelphia; T. Janviers, Baltimore; Degrand & Smith, Boston.

P. S.—Railroad Companies would do well to forward their orders as early as practicable, as the subscriber is desirous of extending the manufacturing so as to keep pace with the daily increasing demand for his Spikes. ☞(1J23am) H. BURDEN.

AMES' CELEBRATED SHOVELS, SPADES, &c.

300 dozens Ames' superior back-strap Shovels
150 do do do plain do
150 do do do cast steel Shovels & Spades
150 do do Gold-mining Shovels
100 do do plated Spades
50 do do socket Shovels and Spades.

Together with Pick Axes, Churn Drills, and Crow Bars (steel pointed,) manufactured from Salisbury refined iron—for sale by the manufacturing agents,

WITHERELL, AMES & CO.
No. 2 Liberty street, New-York.
BACKUS, AMES & CO.
No. 8 State street, Albany.

N. B.—Also furnished to order, Shapes of every description, made from Salisbury refined Iron. 4—ytf

MILL-DAM FOUNDRY.

TO BE SOLD OR LEASED the above well known establishment, situated one mile from Boston. The improvements consist of,

No. 1. *Boiler House*, 50 feet by 30 feet, containing all the necessary machinery for making boilers for *Locomotive* and other steam Engines.

No. 2. *Blacksmith's Shop*, 50 feet by 20, fitted with cranes for heavy work.

No. 3. *Locomtive House*, 54 feet by 25, used for putting together Locomotive Engines. Several of the best Engines in use in the United States have been put in this establishment.

No. 4. A three story brick building, covered with slate, 120 feet by 46, containing two water-wheels, equal to 40 horse power; Machine Shop, filled with lathes, &c.; Pattern Shop; Rolling Mill and Furnaces, capable of rolling 4 tons of iron per diem, exclusive of other work; three Trip Hammers, one of which is very large; engine for blowing Cupola Furnaces, moved by water-wheel; one very superior 12 horse Steam Engine, which could be dispensed with; and a variety of other machinery.

No. 5. An Iron Foundry, 80 feet by 45, with a superior air Furnace, and two Cupolas, Core oven, Cranes, &c. fitted for the largest work. Attached to the Foundry is a large ware-house, containing Patterns for the Castings of Hydraulic Presses, Locomotive and other Steam Engines, Lead Mill Rolls, Geering, Shafts, Stoves, Grates, &c. These were made of the most durable materials, under the direction of a very scientific and practical Engineer, and are supposed to be of great value.

No. 6. A building, 65 feet by 36, containing a large stack of chimneys, and furnaces, for making Cast Steel. This building has been used as a boarding-house, and can accommodate a large number of men.

No, 7. A range of buildings, 200 feet long by 30, containing counting room, several store rooms, a Brass Foundry, room for cleaning castings, a large loft for storing patterns, stable for two horses, &c. &c.

The above establishment being on tide water, presents greater advantages for some kinds of business than any other in the United States. Coal and Iron can be carried from vessels in the harbors of Boston, to the wharf in front of the Factory, at 25 to 30 cents per ton. Some of the largest jobs of iron work have been completed at this establishment; among others, the great chain and lift pumps for freeing the Dry Dock at the Navy Yard, Charleston.

The situation for Railroad work is excellent, being in the angle formed by the crossing of the Providence and Worcester Railroads. The Locomotive "Yankee," now running on the latter road, and the "Boston," purchased by the State of Pennsylvania, were built at these works. With the Patterns and Machinery now in the premises, 20 Locomotives, and as many tenders, besides a great quantity of cars and wagons, could be made per annum.

For terms, apply to
THOS. J. ECKLEY, Boston,
or to ROBERT RALSTON, Jr. Phila.
Boston, April 21, 1835. j25—4t

☞ THE NEWCASTLE MANUFACTURING COMPANY, incorporated by the State of Delaware, with a capital of 200,000 dollars, are prepared to execute in the first style and on liberal terms, at their extensive Finishing Shops and Foundries for Brass and Iron, situated in the town of Newcastle, Delaware, all orders for LOCOMOTIVE and other Steam Engines, and for CASTINGS of every description in Brass or Iron. RAILROAD WORK of all kinds finished in the best manner, and at the shortest notice.

Orders to be addressed to
MR. EDWARD A. G. YOUNG,
feb 20—ytf Superintendent, Newcastle, Del

NOTICE TO CONTRACTORS.

JAMES RIVER AND KANAWHA CANAL.

PROPOSALS will be received at the Office of the James River and Kanawha Company, in the City of Richmond, from the 15th to the 23rd day of August, for the construction of all the Excavation, Embankment and Walling not now under contract, together with nearly all the Culverts and the greater portion of the Locks between Lynchburg and Maidens' Adventure.

The work now advertised embraces the twenty miles between Columbia and the head of Maidens' Adventure Pond, the eight miles between Seven Island Falls and Scottsville, and about twenty isolated sections, reserved at the former letting, between Scottsville and Lynchburg.

The quantity of masonry offered is very great—consisting of about two hundred Culverts of from three to thirty feet span; nine Aqueducts, thirty-five Locks a number of Wastes, with several farm and road Bridges.

General plans and specifications of all the work, and special plans of the most important Culverts and Aqueducts, will be found at the offices of the several Principal Assistant Engineers on the line of the Canal.

The work will be prepared for examination by the 25th July; but mechanics, well recommended, desirous of immediate employment, can obtain contracts for the construction of a number of Culverts at private letting.

Persons offering to contract, who are unknown to the subscriber, or any of the Assistant Engineers, will be expected to accompany their proposals by the usual certificates of character and ability.

CHARLES ELLET, Jr.,
Chief Engineer of the James River and Kanawha Company.

NOTE.—The Dams, Guard-Locks, most of the Bridges, and a number of Locks and Culverts, are reserved for a future letting. Persons visiting the line for the purpose of obtaining work, would do well to call at the office of the Company in the city of Richmond, where any information which they may desire will be cheerfully communicated.

The valley of James River, between Lynchburg and Richmond, is healthy. (20—ta18) C. E. Jr.

RAILROAD CAR WHEELS AND BOXES, AND OTHER RAILROAD CASTINGS.

Also, AXLES furnished and fitted to wheels complete at the Jefferson Cotton and Wool Machine Factory and Foundry, Paterson, N. J. All orders addressed to the subscribers at Paterson, or 60 Wall street, New-York, will be promptly attended to.

Also, CAR SPRINGS.

Also, Flange Tires, turned complete.

J8 ROGERS, KETCHUM & GROSVENOR.

STEPHENSON,

Builder of a superior style of Passenger Cars for Railroads.

No. 264 Elizabeth street, near Bleecker street, New-York.

RAILROAD COMPANIES would do well to examine these Cars; a specimen of which may be seen on that part of the New-York and Harlaem Railroad now in operation j25tf

ALBANY EAGLE AIR FURNACE AND MACHINE SHOP.

WILLIAM V. MANY manufactures to order, IRON CASTINGS for Gearing Mills and Factories of every description.

ALSO—Steam Engines and Railroad Castings of every description.

The collection of Patterns for Machinery, is not equalled in the United States. 9—1y

NOTICE OF THE NEW-YORK AND ERIE RAILROAD COMPANY.

THE Company hereby withdraw their Advertisement of 26th April, in consequence of their inability to prepare in time, the portions of the line proposed to be let on the 30th June, at Binghampton, and on the 11th of July at Monticello. Future notice shall be given, when proposals will be received at the above places, for the same portions of the road.

JAMES G. KING, President.
21—tf

ARCHIMEDES WORKS.

(100 North Moor street, N. Y.)
NEW-YORK, February 12th, 1836.

THE undersigned begs leave to inform the proprietors of Railroads that they are prepared to furnish all kinds of Machinery for Railroads, Locomotive Engines of any size, Car Wheels, such as are now in successful operation on the Camden and Amboy Railroad, none of which have failed—Castings of all kinds, Wheels, Axles, and Boxes, furnished at shortest notice.

H. R. DUNHAM & CO.
4—ytf